DOCUMENT RESUME

ED 026 800 40 EC 003 667

By-Kenney, Helen J.; And Others

Improving the Education of Emotionally Disturbed Adolescents through Educational Programming in Terms of Curriculum and Methods. Final Report.

McLean Hospital, Belmont, Mass.

Spons Agency-Office of Education (DHEW), Washington, D.C. Bureau of Research.
Bureau No-BR-6-2315
Pub Date Jun 67
Grant-OEG-1-6-062315-1586
Note-100p.
EDRS Price MF-$0.50 HC-$5.10
Descriptors-Abstraction Levels, Adolescents, Audiovisual Instruction, Case Records, *Cognitive Processes, Creativity, *Curriculum, *Emotionally Disturbed, English, *Exceptional Child Research, History, Instructional Materials, Language Ability, Learning Characteristics, Perception, Pictorial Stimuli, Student Evaluation, *Teaching Methods, Testing, Unit Plan, Visual Perception

A project to design and evaluate instructional techniques to be used with emotionally disturbed adolescents compared two groups of emotionally disturbed adolescents with normal high school students. Objectives were to evaluate experimental curriculum units and to obtain data to determine to what extent learning difficulties characterize emotionally disturbed adolescents in particular or to what extent they are characteristic of adolescent learning problems in general. One cognitive style dimension investigated was reflection-impulsivity, or a student's disposition to reflect in a problem situation as opposed to an impulsive unconsidered response. The emotionally disturbed students showed a higher degree of impulsivity on one of the two standardized measures used compared to a group of normal controls ($p=.05$). On tests of creativity there were no statistically significant differences between the two groups. Disturbed students showed a greater relationship between creativity and reflection on verbal measures and between creativity and impulsivity on visual measures. Language problems were found to be semantic, not syntactical. Various curriculum units combining visual and verbal materials, and specific intellectual skills training were helpful in improving cognitive functioning. (Author/RP)

ED026800

BR-6-2315
PA-40
OE-BR

FINAL REPORT

Project No. 6-2315
PA-40
Grant No. OEG1-6-062315-1586

IMPROVING THE EDUCATION OF EMOTIONALLY DISTURBED ADOLESCENTS THROUGH EDUCATIONAL PROGRAMMING IN TERMS OF CURRICULUM AND METHODS

June 1967

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

FINAL REPORT

Project No. 6-2315

Grant No. OEG1-6-062315-1586

IMPROVING THE EDUCATION OF EMOTIONALLY DISTURBED ADOLESCENTS THROUGH EDUCATIONAL PROGRAMMING IN TERMS OF CURRICULUM AND METHODS

June 1967

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

Final Report

Project No. 6-2315

Grant No. OEG1-6-062315-1586

IMPROVING THE EDUCATION OF EMOTIONALLY DISTURBED ADOLESCENTS THROUGH EDUCATIONAL PROGRAMMING IN TERMS OF CURRICULUM AND METHODS

Helen J. Kenney	Principal Investigator
William C. Kvaraceus	Co-investigator
Francis de Marneffe	Co-investigator
Betty R. Stewart	Senior Research Associate
John Dunn	Research Associate

Research Assistants	Classroom Teachers
Barbara W. Harris	Deborah Guzzetti
Mildred J. McIntyre	Barbara Harris
Sharon Nicol	

McLean Hospital

Belmont, Massachusetts

June, 1967

The research reported herein was performed pursuant to a grant with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U. S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE

Office of Education
Bureau of Research

TABLE OF CONTENTS

List of Tables vii

List of Figures viii

Acknowledgments ix

Summary xi

Part I – Overview of Project 1

Part II – Cognitive Style, Creativity, and Language: The Evidence of the Present Study 4

- Cognitive Style 4
- Creativity 11
- Cognitive Style and Creativity 19
- Cognitive Style and Emotional Disorders 19
- Language 22

Part III – Classroom Learning: The Experimental Curriculum Units 23

- The English Curriculum Units: Content, Procedures, and Evaluation 25
  - Humor and Satire Unit 25
  - Perceptual Training 32
  - Theme Reading 47
- The History Curriculum Units: Content, Procedures, and Evaluation 48
  - 1) History Word Sorting 49
  - 2) Abstract Terms 57
  - 3) Questioning Techniques 59
  - 4) Speculation Training Exercise 59

TABLE OF CONTENTS (Cont.)

Visual Tasks 60

1. Napoleon Slide Exercise 62
2. Industrial Revolution Unit 66
3. Italian Unification Slide Exercise 69
4. Imperialism Exhibit 71
5. Affectivity Training in the Unit on Impressionism 71
6. Art Sorting Task 72
7. "Revolution Is . . ." Booklet Exercise 75
8. Cartoon Exercises 76

Part IV – Two Profiles in Learning 86

Postcript 89

Bibliography 90

LIST OF TABLES

1 Arlington School – Reflection-Impulsivity 7

2 Newton High School – Reflection-Impulsivity 8

3 Comparison of Arlington School and Newton High School on Reflection-Impulsivity 9

4 Correlations Between Time and Errors on MFF and HVM 10

5 Performance on Creativity Measures – Arlington School 14

6 Performance on Creativity Measures – Newton High School 15

7 Intercorrelations Between Individual Tests of Creativity 16

8 Rankings of Arlington School Students Completing Five Measures of Creativity 17

9 Intercorrelations Between Five Creativity Measures Arlington School 18

10 Intercorrelations Between Measures of Creativity and Cognitive Style – Arlington School and Newton High School 20

11 Perceptual Training Evaluation 41

12 Results of Word Sorting 54

13 Comparison of Fall and Spring Word Sorting Exercise Results 55

14 Word Sorting Exercise Results – Two History Groups 56

15 Scores and Qualitative Responses to Napoleon Slide Exercise 67

LIST OF FIGURES

1 Cartoon Sort I 28
2 Cartoon Sort II 30
3 Visual Training Pairs 33
4 Poetry – Snakes 38
5 "Element" responses – test poems 42
6 "Relation" responses – test poems 43
7 "Element" responses – each half visual and verbal 44
8 "Relation" responses – each half visual and verbal 45
9 Modern European Topical Outline 50
10 Abstract Words Exercise 58
11 Recipes (Italian and Chinese) 61
12 Napoleon Slide Exercise 63
13 Industrial Revolution Slide Exercise 68
14 Italian Unification Slide Exercise 70
15 Examples of Paintings Used in Art Sorting 73
16 "Revolution Is. . ." Captioning Examples 77
17 Cartoons Used in the Cartoon Quotes Exercise 82
18 Cartoon Captioning Examples 85

ACKNOWLEDGMENTS

A program aimed to improve the education of emotionally disturbed adolescents within a hospital setting could not be carried out without the cooperation of many individuals in school and hospital. The explicit nature of the educational cadre drawing together teacher, psychologist, psychiatrist, curriculum consultant, principal, and media specialist engaged many persons in the diagnostic, teaching and research processes. Without the cooperation of all members of the cadre, the complex meshing of services in planning, implementing, and evaluating the learning and teaching program would not have been possible. We wish particularly to cite all those members of school and hospital staff as well as special consultants who participated significantly in the Arlington School Project.

School Administration: Mr. John Dunn, principal of Arlington School, lent his steady support and advice to the research staff. As a communication channel between school and hospital, his assistance protected the researchers from the isolation that often befalls the researcher-theorist from the action-oriented staff.

Teachers: The ultimate aim of the demonstration was to provide new insights and new materials and methods for the teacher working in the classroom. Hence, the central figure in the project is the teacher. It was the teacher who translated proposals into practices often under the all-seeing eye of an observer. The willingness of the teacher staff to undertake new notions and to adjust their teaching style in an effort to achieve the goals of the project and to submit constantly to close evaluation of their efforts made it possible for the research staff to test the various hypotheses. We are most indebted to the two teachers who were the mainstay of our project during the past year: Deborah Guzzetti, English; and Barbara Harris, History.

Research Staff: Working in the curriculum laboratory under crowded conditions, an able and imaginative research staff developed materials and methods, generated ideas, prepared guidelines, and designed evaluation procedures for the teaching-learning interactions. Dr. Betty Stewart served as senior research associate, coordinating in particular the work on basic cognitive processes. Barbara W. Harris and John Dunn contributed their considerable talents to the History curriculum. Sharon Nicol administered the standardized tests of cognitive style and creativity, and with Mildred McIntyre worked especially on the evaluation of the English curriculum units.

Consultants: The project benefited from the service of a number of consultants. Henry Bissex assisted as a curriculum specialist in English; Frances Brooks served as media and materials specialist for the perceptual training unit; Dr. Stephen Goldburgh furnished valuable clinical insights into student reactions to project material and methods; Dr. Jerome Kagan provided theoretical and practical advice concerning cognitive style and functioning in classroom application; Dr. Wayne O'Neill and Dr. Alfred Stanton reflected on relationships between language and psychiatric problems. Dr. Francis deMarneffe was general clinical advisor to the project.

Hospital Administration: Many members of the McLean Hospital staff assisted the investigators throughout the Project. Special mention is due Golda Edinburg, Director of Social Work, for her steady interest and encouragement and to Thomas Burley for his assistance in fiscal matters.

SUMMARY

The basic aims of the project were to design, demonstrate, and evaluate some instructional techniques to be used with emotionally disturbed adolescents. The more specific objectives were to conduct systematic evaluations of experimental curriculum materials and procedures in relation to cognitive functioning and cognitive skills training, to obtain control population data in order to determine to what extent learning difficulties characterize emotionally disturbed adolescents in particular, or to what extent they are characteristic of adolescent learning problems in general, and to investigate cognitive style, creativity, and linguistic competencies among disturbed adolescents. Even more specifically, the project focussed on learning and teaching in the social studies and English classes in a hospital school, Arlington School, enrolling about forty students.

An educational cadre composed of classroom teachers, curriculum specialists, cognitive psychologists, and clinicians constructed the experimental curriculum units which were classroom tested and assessed using direct observation, instructional interviews, and special evaluative devices. In format, the units were planned to help the student move speedily from a great deal of concrete material in a variety of sense modalities to appropriate abstractions. It was postulated that materials alone do not produce learning. Just as crucial are the kinds of intellectual operations the student performs on the materials, and for this reason specific training in cognitive skills was planned in all experimental units.

The cognitive style dimension upon which the project concentrated was that of reflection-impulsivity, i.e., a student's disposition to reflect upon the elements in a problem situation as opposed to an impulsive unconsidered response. Arlington students showed a higher degree of impulsivity on one of the two standardized measures used compared to a group of normal controls. On tests of creativity there were *no statistically significant* differences between the two groups although the Arlington students show greater stability over all measures. There was for the Arlington group in general a greater relationship between reflection and creativity on verbal measures and a greater relationship between impulsivity and creativity on a visual measure of creativity. On the basis of the linguistic tests used there appeared to be no marked linguistic regressions in syntactical structure. Semantic problems and elliptical discourse are the notable language difficulties. Assessment of instructional materials indicate cognitive functioning can be improved with a combination of visual and verbal materials, but it is necessary to provide for specific intellectual skills training with both types of materials.

PART I

Overview of Project

The basic aims of this project are to design, demonstrate, and evaluate instructional materials and techniques to be used with emotionally disturbed students. The project is a direct continuation of the work begun in 1965 under a previous grant from the U.S. Office of Education under the provisions of Title III, Section 302 Pl 88-64 (No. 5-0979-4-11-3) through the Division of Handicapped Children and Youth.

By way of general background for the present report, the work of the first year, 1965-66, and its rationale will be summarized briefly. Before this discussion, however, it will be helpful to describe the school program in which the project materials and activities are embedded.

Arlington School is an integral part of a residential treatment program for children age 13 and above at McLean Hospital, Belmont, Massachusetts, a 278 bed, private, non-profit teaching mental hospital in which all types of mental illness are treated. It is a Division of the Massachusetts General Hospital and is affiliated with Harvard University as a teaching hospital. The main therapeutic tools include intensive psychotherapy and milieu therapy as well as all other recognized forms of psychiatric treatment. From the beginning, the purpose of the school was defined as educational rather than therapeutic. In operational terms, this definition was taken to imply the following:

1. emotionally disturbed adolescents can learn and can be taught during their period of hospitalization.
2. regular classroom teachers, trained in service by educational and psychiatric personnel, can play a unique role in the hospital treatment program.

The overall philosophy of the hospital supported the rationale of the educational unit as just defined. It is believed that adult men and women patients, as far as their clinical condition allows, should engage in real life work situations. Behind this is the idea that the hospitalized psychiatric patient in his progress toward recovery and full participation in the life of his community needs opportunities for graduated re-entry into many different working and social situations. For adolescents there is in addition a genuine need for the actual educational preparation they receive in the hospital school. Hospitalization without schooling can create an educational hiatus that may have serious intellectual, social, and economic repercussions perhaps for the remainder of the patient's life, as well as complicating emotional readjustment after discharge.

Arlington School was established in September, 1961 as an extension of the rapidly developing program for adolescents. Academically, most of the student-patients represent abilities and interests within the college preparatory range and they come from generally high socio-economic backgrounds. Diagnostically, they are about equally distributed in the following major groups: character disorders, schizophrenics, and severe personality disorders.

With a grant from the Medical Foundation, Inc., of Boston a two year exploratory study was conducted at the school from 1962-64 to identify special problems of teaching, learning, and role function which result when a formal school organization is transplanted from its natural habitat – the community – to an unfamiliar setting – the hospital. The major learning and teaching problems which emerged from this study shaped the objectives of last year's U.S. Office of Education supported project, **Improving the Education of Emotionally Disturbed Adolescents Through the Educational Cadre as a Diagnostic, Teaching, and Research Instrument,** (No. 5-0979-4-11-3).

The educational cadre brings together a group of specialists to work with the classroom teacher. These include a curriculum specialist – an expert on materials and methods of instruction; a cognitive psychologist – an investigator of the problems of teaching and learning; and a clinician (psychiatric) who adds an understanding of the emotional component of learning. Two working cadres within this general membership were formed to concentrate on selected courses of study, one focusing on English and the other on History curricula. Each cadre met weekly to work out the details of curriculum materials and methods in line with strategies derived from the basic rationale of the project. In addition, project assistants maintained continuous contact with teachers and students. They assisted the teachers in planning the presentations of materials, observed student reactions to the experimental units, interviewed students and administered tests.

In both this year's project and last year's, the experimental curriculum units were developed in whole or in part around three main concerns: **cognitive style; learning and recall;** and **language.** The **cognitive style** upon which the project concentrated was that of reflection-impulsivity. Whether a student's disposition is to reflect upon the elements in a problem situation, or to give an impulsive unconsidered response determines where he will lie on the reflection-impulsivity continuum. Cognitive style appears to affect directly the quality and level of cognitive functioning. It relates to student learning efficiency, classroom interaction, and possibly to his apparent intellectual difficulties. The concern with **learning and recall** was expressed in terms of specific learning problems of the emotionally disturbed. **Language** was chosen as an area of concentration because it is so crucial in academic learning. In addition, information about the student's level of language functioning is invaluable to curriculum development.

In general, both English and History curriculum units were planned to help the student move speedily from particular concrete materials to appropriate abstractions, each new induction leading to a wider range of interesting particulars. It is believed that materials alone do not produce learning. Just as crucial are the kinds of intellectual operations the student must perform on the materials, and for this reason specific training in cognitive skills was planned for in all experimental units.

The work of last year was devoted to establishing the basic approaches to the experimental curriculum; identifying general measurement and evaluation procedures and deciding on ways of gathering information. On the basis of this first year's exploratory work, units were designed which differed more precisely along specified dimensions to meet the needs of the students in the following ways:

1. to capture and maintain attention through varied and rapid pacing of activities.
2. to take into account preferred learning channels, e.g., auditory,

visual, tactual (even gustatory).

3. to present as much concrete material as possible to give students a chance to retain longer and more vividly initial learning experiences by providing them opportunities to represent to themselves their learning in a variety of modes: the iconic (images) and the enactive (actions) as well as the symbolic (words and numbers).
4. to give them active training in techniques for searching out and developing conceptual relationships.
5. to encourage flexibility in thinking.

This year's work differed from the first year's, in being more directly concerned with basic cognitive functioning and less with what were formerly problems of motivation. While still often depressed, confused, and unable to function adequately, the students this year were much more positive and willing to try to cooperate. Although a number of explanations for this improvement are plausible – e.g., psychotherapy, the experimental teaching materials and techniques, or a combination of both –, it was quite clear that there was a diminution in student suspicion and hostility toward the project because it might be another "psychiatric" program in disguise.

In any event, the change in attitude made it feasible to explore more demanding methods of cognitive training than had been possible last year when so much of the teacher's time and energy had to be devoted to maintaining morale.

The project also was able to turn its attention this year to the identification and study of creative thinking which, teachers had observed that these students frequently displayed an "off-beat" type of thinking, if a little less unbridled, would be considered a promising indicator of creativity. As functioning, however, this ability to see ideas and problems in novel ways did not appear to lead to productive results.

The work on language concerned the extent to which there might be significant syntactic characteristics of the language of the emotionally disturbed.

This report will cover in detail the project activities of the second year. It will be necessary, however, to draw on some of the work of the first year in order to make clear second stage developments of curriculum units and evaluation procedures. In broad outline, the chapters to follow will consider: **Basic Processes: Cognitive Style, Creativity**, and **Language; Classroom Learning**; and **Studies of Individual Students.**

PART II

Cognitive Style, Creativity, and Language: The Evidence of the Present Study

In this chapter the basic conceptualizations supporting the actual classroom materials and teaching techniques are considered. More specifically, this section will be concerned with certain basic processes involved in acquiring knowledge, understanding phenomena, solving problems, and creating new forms of ideas which may be affected by emotional disturbance. The interest in these aspects of learning was not merely to identify differences between emotionally disturbed and normal students, but more importantly, it was to determine whether disturbed students with learning difficulties could be helped through direct instruction to improve their skill in learning useful things by way of training in these basic processes. However, in order to develop curricula into which to embed these processes it is first necessary to select those cognitive and linguistic competencies and characteristics considered most relevant to an improved educational program, and then to measure the performance level of students on these dimensions. With such readings, initial status and continuous progress along a learning route can be charted and evaluation of a curriculum – the substantive transaction between a teacher and the student – becomes something more than intuitive impressions that something is or is not working.

COGNITIVE STYLE

A basic premise of the project is that there are many interacting dispositions within a student that ultimately affect the quality of his learning. Most teachers are aware of that dimension of cognitive functioning typically referred to as intelligence and its effect on learning. A few teachers and many psychologists are becoming quite interested in another dimension of cognitive functioning usually labelled cognitive style (Kagan, Witkin, Gardner). Kagan has concentrated his latest work on a single disposition range he labels impulsive-reflective and he describes what he means as follows:

> One such disposition describes the child's tendency to reflect upon the quality of a cognitive product, in contrast to an impulsive and unconsidered response. The child who is prone to respond impulsively in difficult problem situations (i.e., to initiate a reasoning sequence suggested by the first hypothesis that occurs to him and/or report an answer without sufficient reflection on its possible validity is more likely to produce an incorrect response than the child whose natural inclinations prompt him to reflect over the differential adequacy of several solution

> hypotheses and to consider the quality of an "about to be reported" answer. (Kagan, 1965, p. 134)

Kagan, then, sees an almost necessary relationship between a style of response and the handling of a problem and the resulting outcome in terms of accuracy. In other papers on the same issue, he makes it very clear that the hypothesized relationship occurs only when there are very real elements of "response uncertainty." That is, when the situation offers room for alternative hypotheses and processes, the dimension of impulsivity-reflectivity is important. When a memory or rote learning task is involved, there is no reason for the dimension to be operative.

Kagan constructed two tests to measure reflection-impulsivity. It is these two tests which form the base for the project's analysis of cognitive style.

> a) **Matching Familiar Figures.** In this task the student is shown one picture (the standard) and six very similar pictures, only one of which is identical to the standard. The student's task is to select the one that is identical to the standard. The standard and the variations are kept in the student's sight while he makes his selection. The major variables scored are time to the first response and total number of errors. The final time score was the median response time over all twelve items in the test since the middle score avoids the distortion created by one or two unusually short or long responses in an individual's overall response pattern.
>
> b) **Haptic-Visual Matching.** In this task, the student first explores with his fingers a wooden form (approximately 3 inches square) to which he has no visual access. He is allowed an unlimited time to explore the form, and when he withdraws his hand, he is presented with a visual array of six stimuli, one of which matches the form he had explored haptically. The student has to select the visual stimulus that corresponds to the form he has explored. The ten-item test contains geometric forms, and yields three variables: errors, response time, and palpation time (i.e., the time the student devotes to tactual exploration of the wooden form).

In both tests, Matching Familiar Figures (MFF) and the Haptic-Visual Matching (HVM), there is present a high degree of uncertainty about the response to be made, and it is in this type of situation that an immediate response is likely to be an incorrect one. While a number of studies have indicated substantial support of Kagan's hypothesis linking time (long) and errors (few), using these measures, all of the published reports have been concerned with younger children. It did not seem unreasonable on the basis of present research on cognitive style to hypothesize that adolescents would differ among themselves in modes of cognitive functioning as did younger children, and that cognitive style would be a relatively stable characteristic over varied tasks for them as well. As to the tests themselves, the fact that they were already available in standardized form and that a group of adult professionals at the hospital found then sufficiently challenging in an informal try-out were strong arguments in favor of their use with the Arlington School and control groups.

In this section the results of individual styles identified through Kagan's instruments will be presented, along with the results of a control group of normal students at Newton High School, Newton, Massachusetts. Specific findings related to implications of cognitive style and learning various subject matter are included in the next chapter on classroom learning since the problem of cognitive style is treated directly in the context of English and History.

The relationship of cognitive style to emotional illness will be considered in this chapter and also later when studies of individual students are presented. It is worth noting here the two questions that are of particular interest in regard to manifestations of cognitive style in behavior. First, is a person's cognitive style an aspect of personality functioning which endures even through the onset of emotional illness? While other explanations are possible, absence of a high degree of correlation between cognitive style and type of emotional illness would suggest this possibility. But, if there are relationships between cognitive style and various forms of psychological disturbance, the ways to help children with learning blocks will become a little clearer. Second, how pervasive is a given style, or the strength of its expression, from one behavior setting to another or from one kind of task to another? Student performance on the Kagan measures will be correlated with data obtained from the classroom and psychiatric records to shed light on these two questions.

The results of the MFF and HVM measures on the Arlington School students are presented in Table 1 with the same information for the control group at Newton High School shown in Table 2.

To compare Arlington School students with their controls, Table 3 summarizes mean scores for the two groups. The Arlington School students are treated in two groups, those who were tested in 1965-66 and the present group of students who were tested in the current year. Three returning students are included in the 1967 data.

Mann-Whitney U tests of significance were applied to the data in Table 3. No significant differences were found between the two Arlington School groups except when Haptic Visual errors were compared. These differences were significant at the .001 level. A comparison of Arlington School, 1967, and Newton High School revealed significant differences for Haptic Visual errors and Haptic Visual decision times, Arlington students making significantly more errors, (.001 level) and taking significantly less time to arrive at their decisions (sig. .05 level). Both of these differences would be indicative of a higher degree of impulsivity on the part of the Arlington School sample than the normal high school sample, and of the 1966 Arlington School group in particular.

Turning to the question of the central hypothesis underlying the measures, namely, that impulsivity is positively correlated with errors, correlations of time and error scores on the MFF and HVM based on the 1967 Arlington School group (N=13) when there were both MFF and HVM scores and Newton High School are presented on Table 4.

Kagan's hypothesis appears to be supported within the groups which are being studied. Out of a maximum potential of 10 correlations for each group – 20 correlations in all – seven are significant at the .05 level or better in the direction indicated by Kagan. That is, high times are positively correlated on the same or different tasks (decision and palpation on both MFF and HVM), errors on different tasks are correlated with each other, and high times are correlated with few errors on the same or different tasks. It is important to note that of the 13 non-significant correlations, nine are still in the predicted direction.

One further analysis seems appropriate, despite shortcomings. That is a general correlation combining the two school groups into one population. While it is not clear that the different school groups are, in fact, one homogeneous group in salient respects, it is likewise not at all

TABLE I

Arlington-School – Reflection-Impulsivity

1967

Median Time (seconds) and z Scores on MFF and HVM

Student	MFF Median Time		MFF Errors		HVM Median Palpation Time		HVM Median Decision Time		HVM Errors	
	Time	*z*	*No.*	*z*	*Time*	*z*	*Time*	*z*	*No.*	*z*
A	66.5	1.321	11	.151	--	--	--	--	--	--
B	15.0	-1.327	8	- .274	34.0	- .641	11.0	- .598	13	.818
C	59.5	.952	10	.014	50.0	.218	9.5	- .684	5	- .971
D	18.5	- .636	9	- .124	40.0	- .315	13.5	- .438	10	.145
E	42.0	.056	3	- .961	56.0	.538	65.0	2.735	12	.592
F	56.5	.799	2	-1.096	66.0	1.125	10.0	- .653	8	- .302
G	13.5	- .691	11	.151	--	--	--	--	--	--
H	40.0	- .041	19	1.469	19.0	-1.435	14.0	- .406	6	- .747
I	88.5	2.437	2	-1.096	57.0	.592	48.0	1.749	9	- .078
J	41.5	.031	4	- .824	60.0	.750	21.0	.025	3	-1.417
K	(166.0)*		(1)		33.0	- .688	12.0	- .573	10	.145
L	26.5	- .743	9	- .124	44.0	- .101	18.0	- .154	4	- .179
M	21.5	- .993	9	- .124	20.5	-1.355	9.5	- .684	17	1.707
N	47.5	.332	5	- .673	83.5	2.006	24.5	- .240	7	- .525
O	52.5	.599	20	1.524	55.5	.512	20.0	- .037	9	- .078
P	24.5	- .825	26	2.210	23.5	-1.195	12.5	- .499	18	+1.908
Mean	40.9		9.9		45.9		20.6		9.35	

**K completed only seven MFF items, and his scores are not included in the analysis of MFF data. Positive z scores on time are above the mean (i. e., slow); positive z scores on errors are above the mean (i. e., more errors).*

TABLE 2

Newton High School – Reflection-Impulsivity

1967

Median Time (seconds) and z Scores on MFF and HVM

Student	MFF Median Time		MFF Errors		HVM Median Palpation Time		HVM Median Decision Time		HVM Errors	
	Time	*z*	*No.*	*z*	*Time*	*z*	*Time*	*z*	*No.*	*z*
a	76.5	.984	8	.189	58	.112	32	1.109	11	2.085
b	98	1.931	6	- .308	50	- .132	27	.384	5	.067
c	32.5	- .880	8	.189	35	- .684	37	1.632	7	.738
d	66	.526	3	-1.019	101	1.570	28.5	.573	4	- .268
e	25	-1.192	18	2.535	50	- .201	15	-1.108	6	.403
f	36.5	- .707	6	- .308	109	1.847	16	- .984	2	- .939
g	58.5	.131	4	- .782	94	1.326	34	1.228	4	- .268
h	22	-1.322	5	- .542	61.5	.201	16	- .984	3	- .604
i	67.5	.590	8	.189	17	-1.351	35	1.383	4	- .268
j	43	- .444	12	1.112	41	- .513	18	- .734	6	.403
k	46	- .311	2	-1.256	39.5	- .568	28	.511	1	-1.275
l	84.5	1.309	1	-1.483	43	- .445	25	.144	1	-1.275
m	38	- .646	15	-1.825	25.5	-1.052	9	- .609	9	1.409
Mean	53.4		7.3		55.8		23.9		4.8	

Positive z scores on time are above the mean (i. e., slow); positive z scores on errors are above the mean (i. e., more errors).

TABLE 3

Comparison of Arlington School and Newton High School on Reflection-Impulsivity

1966 - 1967

Mean Scores – Matching Familiar Figures (MFF) and Haptic Visual (HVM)

	MFF			HVM			
	Mean Time	Mean Errors	N	Mean Palpation Time	Mean Decision Time	Errors	N
Arlington School 1966	52.1	6.8	19	---	15.2	1.82	17
Arlington School 1967	40.9	9.9	15	45.9	20.6	9.35	14
Newton High School	53.4	7.3	13	55.8	23.9	4.8	13

demonstrable that they are not, at least on the dimension being considered. Of the 10 possible correlations seven are significant beyond the .05 level of probability in the direction predicted with two more showing a non-significant trend in the predicted direction.

The general conclusion from the analyses of both the individual and combined groups is that adolescents – both normal and emotionally disturbed – are likely to perform better on the MFF and the HVM measures when they take longer to arrive at their decisions. While it is important to establish the validity of the reflection-impulsivity dimension, as Kagan defined it, that accomplishment is only a necessary preliminary step so far as the present project is concerned. As mentioned earlier, an underlying premise of the project goals is that an understanding of basic cognitive processes is required for the production of improved curricula. Cognitive style, as Kagan defines it, is felt to be extremely relevant to successful learning.

Kagan himself has already raised a number of interesting implications of reflection-impulsivity for everyday practices in education. One has to do with the teacher's typical lack of awareness of a child's conceptual tempo. Teachers tend to translate this behavior into such terms as bright or dull, obedient or disobedient, timid or outgoing. Given two children with the same intelligence test score and social class background, one reflective and the other impulsive, a teacher is in danger of classifying the reflective child as slow and less bright than the impulsive, quick child.

A further implication concerns the tempo of the teacher and presentation of material. It is likely that the tempo of instruction itself will reinforce tendencies toward being reflective or impulsive. As Kagan suggests, perhaps the school of the future will tailor the tempo of the child to that of the teacher in order to maximize the productivity of the learning enterprise.

The present project had one major question relating to cognitive style and efficiency in learning. Do some cognitive styles and some subject areas "match" better than others? An examination of the usual course in English reveals that it is not a unitary subject area, but it

TABLE 4

Correlations between Time and Errors on MFF and HVM

(T =Response Time MFF; T_{HV_1} -Palpation Time; T_{HV_2} =Decision Time)

1967

Time and Error Variables		Arlington School (N=13)	Newton High School (N=13)	Combined Schools (N=26)
T_{MFF}	E_{MFF}	Not Significant -.284	** -.468	** -.353
T_{MFF}	T_{HV_1}	** .560	Not Significant -.165	Not Significant -.230
T_{MFF}	T_{HV_2}	* .431	** .494	*** .440
T_{MFF}	E_{HV}	* -.399	Not Significant .021	** -.327
E_{MFF}	T_{HV_1}	*** -.601	* .366	*** .465
E_{MFF}	T_{HV_2}	* -.409	** .508	*** .446
E_{MFF}	E_{HV}	Not Significant .331	*** .636	*** .450
T_{HV_1}	T_{HV_2}	* .399	Not Significant -.015	Not Significant .225
T_{HV_1}	E_{HV}	** -.503	Not Significant -.257	** -.403
T_{HV_2}	E_{HV}	Not Significant 0	Not Significant 0	Not Significant .220

---

* $p < .10$
** $p < .05$ (r=.441, N=13; r=.317, N=26)
*** $p < .01$ (r=.592, N=13; r=.437, N=26)

is composed of several different curriculum zones. However, it could be hypothesized that English and History would require differing degrees of reflection-impulsivity in certain learning tasks. For example, one would expect that the student who could give direct and spontaneous expression to a rich flow of ideas would function better as a creative writer in the English class. Impulsivity might also lead a student more quickly to an intuitive appreciation of imagery in literature than would a highly reflective attitude which might anchor a student more closely to precise and literal interpretations.

On the other hand, the study of History demands the acts of reflection. The student in studying History must constantly operate intellectually in these three ways: 1) seeking to discover what is pertinent to the subject in his reading, 2) seeking to structure what he selects, or evaluates to be significant, and 3) asking the question "why?" The student whose natural inclinations prompt him to reflect over the differential adequacy of several hypotheses and to consider the quality of an "about-to-be-reported answer" should gain a great deal from a course in History.

In practical terms, one aim of the project was to design instructional materials and techniques which would lead a student to capitalize on a preferred style when appropriate, to learn to be more reflective or more impulsive if necessary when the occasion warrants it, and to develop the flexibility in style which seems to be required for overall successful performance in school.

While cognitive style was a major focal concern, another important aspect of intellectual functioning – creativity – was studied during this year. A more specific discussion of the conceptualization of creativity in the context of the project will be taken up in the next section. It is worth noting that the meaning attached here to creativity is one which has an essential relationship to cognitive style and functioning. To be a truly productive thinker and creator, one must be able to organize and manage cognitive resources effectively and appropriately for many different types of problems. Creative thinking, despite its being still a little understood phenomenon, does include in most working definitions at the present time some, if not all, of the following elements as described by Crutchfield:

> "An ability to be flexible and adaptive in the use of one's often competing skills – being able to be alternatively intuitive and analytical, engaged and disengaged, serious and playful, creative and critical, seeking for complexity and striving for simplicity. And above all, it involves an understanding of how to compensate for deficiencies in certain of one's skills and how to exploit one's special talents, not only in the choice of the mode of attack on a problem, but also in the very choice of problems to work on." (Crutchfield, 1966, p. 67)

The idea, then, of relating reflection-impulsivity to creativity appears to be quite relevant to the goals of the project.

CREATIVITY

In the original proposal strong interest was expressed in the identification and study of creative thinking among students in the project sample. Teachers have observed that the students at Arlington School can be highly novel in their classroom work. Observational and interview data obtained in the first year revealed that many of these students can perceive and structure materials and ideas in different "off-beat" ways.

On the other hand, researchers and teachers have often been impressed by the degree of support these students seem to need in order to engage in creative activities. Even a normal student requires some support and assurance that his "way-out" thinking is being accepted and valued in the academic setting. The emotionally disturbed adolescent, however, appears to be additionally handicapped in expressing and profiting from his creativeness, both because he fears criticism and rejection by peers and teachers and because he seems to fear the release of internal constraints necessary to the creative process. There are indications, then, of better than average creative potential in some of the students, but also of greater than average difficulty in expressing and developing it.

With this realization the project moved actively into creativity identification and training. Wallach and Kogan (1965) in their recently published study of creative modes of thinking in fifth graders provide the basic rationale for this phase of the project's activities. They point out that the creative mode of thinking may be greatly inhibited if the child believes he is being evaluated or tested. Such a belief holds him to the "safe" response rather than the bold creative response he might otherwise make. Creativity as they define it is evidenced by a) the ability to produce a large number of associations and b) to give unique associations. In order to be creative in this manner, the student must have an environment which is "free from or minimally influenced by the stresses that arise from academic evaluation and a fear of the consequences of error." He must be provided with an atmosphere which will allow him to be "playful" in the realm of associations and ideas.

Wallach and Kogan have developed five measures of creativity which were adapted for use in the present study. The first, a test of instances, asks the student to name as many things as he can think of in each of the following areas: a) round things, b) things that make a noise, c) square things, and d) things that move on wheels. The second test, a test of alternate uses, asks the students to give all the different ways he can think of to use a variety of objects; e.g., knife, cork, shoe, chair. In a test of similarities, he is asked to give as many ways as he can in which ten sets of objects are alike: e.g., potato and carrot, cat and mouse, milk and meat. The last two tests are visual, one of them presenting the student with a series of eight abstract geometrical patterns and the other presenting him with lines of various kinds. For each pattern he is asked to give as many things as he thinks it could be; for each line as many things as it makes him think of. All tests are scored for total number of responses given by students in each particular reference group: the Arlington students and the students in the control group at Newton High School.

For the Arlington group, the first step was to attempt to convince the student that the measures are non-evaluative and non-clinical in purpose. Because of class schedule problems it was difficult to arrange for the measures to be given individually as they were in the Wallach and Kogan study. They were given in the regular class by the teacher who endeavored to relax the students by telling them that they could take as much time to write their responses as they wanted. The teacher also tried to get the students to accept the task as a meaningful one which would have relevance to general school experience. The opening statement went generally like this:

> One of the things we all hope to gain from our studies is an ability to express ourselves clearly and distinctively. To do this, it is necessary to feel free and at home with words and ideas. It is important, therefore,

> to get all your ideas out in front of you, so your mind can range over an assortment of possibilities. From this wide choice of ideas, you will have a better chance to find the one that is most interesting and appropriate. It stands to reason, the more thoughts you have to choose from, the better your ideas will be.

In general, the students accepted the task but they complained of its length. Their complaints seem justified in view of their obviously larger supply of available responses than the fifth grade children with whom the measures were originally used. Although 28 Arlington students completed from one to five parts of the five-part battery, the responses of only seventeen students will be studied. The reason for this was the problem of time at Newton High School. There it was possible to administer only Parts I, II, and IV of the battery. To establish comparability between the two school groups, it was decided to consider the seventeen students at Arlington School who completed the same three parts.

Tables 5 and 6 show the total quantity and uniqueness scores based on the tests of instances, alternate uses, and pattern meanings.

A t-test of significance was applied to the data in Tables 5 and 6. No significant differences were found between Arlington School students and Newton High School students on either Quantity (t=1.54) or Uniqueness (t=.44). Rank order correlations between quantity and uniqueness for both schools (Arlington=.94; Newton=.86) indicate a strong relationship between number of responses and a high level of uniqueness.

Intercorrelations between individual tests tell a different story, as reported in Table 7. In the Arlington School, unique responses on Parts I and II as well as on Parts I and IV were correlated highly. On the other hand, in Newton, no significant correlations were found between the individual tests when unique responses are considered. For both groups, however, there were significant correlations in number of responses–quantity–between the various tests. On the whole, Arlington students who produce many responses, and many responses that are unique, in the case of a given test, also will generate many responses and many unique ones in the other tests. This is not true of the Newton students. A Newton student who produces many responses on one test will be comparably productive on another, but will not necessarily maintain the same relative standing in uniqueness from one test to another.

It should be noted that these conclusions are considered only tentative, pending the acquisition of additional data in the next year of the project's operation. There are indications of greater stability among Arlington School students, but this may be related to the fact that there is greater variance in Arlington School uniqueness scores than there is in Newton uniqueness scores.

The data also show a fair degree of stability in the Arlington School group on verbal measures and on visual measures. The rankings of Arlington students who completed all five measures are presented in Table 8. With only one exception on Part III, similarities, students maintain the same relative placement on a median split in Q score from one verbal test to another. Similarly, there is only one shift in Q score rankings on the two visual tests. With regard to U score rankings, there is only one displacement on each verbal test and one on the visual test.

Table 9 presents the intercorrelations between the various measures of creativity based on the scores of those Arlington students who completed all five parts. Quantity scores on all measures are highly intercorrelated. But when uniqueness scores are considered, the intercorrelations are in general lower than they are for Q-Quantity scores and the higher correlations tend

TABLE 5

Performance on Creativity Measures
(Total Score based on Parts I, II, and IV)

Arlington School

	Quantity		Quantity	Uniqueness		Uniqueness
Student	**Score**	**Rank**	**z Score**	**Score**	**Rank**	**z Score**
Q	280	1	2.674	163	1	(3.154)
R	99	11.5	- .339	39	10.5	- .237
S	99	11.5	- .339	28	12	- .565
E	51	16	-1.339	12	17	-1.007
T	101	10	- .306	39	10.5	- .237
U	178	3	- .977	92	2	1.200
H	116	8	- .057	41	9	- .206
I	131	6	.193	48	7	- .014
Z	190	2	1.173	62	3.5	.872
J	110	9	- .156	61	5	.345
K	67	14	- .872	24	13	- .676
M	66	15	- .889	19	15	- .815
V	40	17	-1.311	20	14	- .786
W	173	4	.892	62	3.5	.372
X	121	7	.027	43	8	- .131
O	71	13	- .792	16	16	- .898
Y	137	5	.192	55	6	.177
Mean	119.4		Mean	48.5		

TABLE 6

Performance on Creativity Measures
(Total Score Based on Parts I, II, and IV)

Newton High School

Student	Quantity		Quantity z Score	Uniqueness		Uniqueness z Score
	Score	Rank		Score	Rank	
n	167	13	.064	31	10.5	- .517
a	117	10.5	- .731	31	10.5	- .517
b	208	5	.715	66	5	.887
c	253	2	1.423	82	1.5	1.529
d	208	6	.731	60	6	.647
o	179	7	.254	33	8	- .454
e	93	14	-1.112	22	13	- .879
f	240	3	1.239	82	1.5	1.529
g	156	8	- .111	25	12	- .758
h	144	9	- .303	19	14	- .999
i	117	10.5	- .732	47	7	.125
p	111	12	- .826	15	15	-1.120
j	261	1	1.541	78	3	1.369
k	212	4	.779	68	4	.967
q	67	16	-1.526	12	16	-1.281
l	75	15	-1.408	32	9	- .498
	Mean 163.0			Mean 43.9		

TABLE 7

Intercorrelations Between Individual Tests of Creativity

	Quantity (Number)		Correlation	Significance
Part I Instance:	Part II Alternate Use	Arlington (N=15)	.731	$p < .001$
		Newton (N=16)	.607	$p < .005$
Part I Instance:	Part IV Pattern Meanings	Arlington (N=15)	.674	$p < .001$
		Newton (N=16)	.594	$p < .01$
	Uniqueness			
Part I Instance:	Part II Alternate Use	Arlington (N=15)	.645	$p < .005$
		Newton (N=16)	.242	N. S.
Part I Instance:	Part IV Pattern Meanings	Arlington (N=15)	.471	$p < .02$
		Newton (N=16)	.242	N. S.

TABLE 8

Rankings of Arlington School Students Completing Five Measures of Creativity

(Q-Quantity; U-Uniqueness Scores)

	Part I Instances		Part II Alternate Uses		Part III Similarities		Part IV Pattern Meanings		Part V Line Meanings	
Student	Q	U	Q	U	Q	U	Q	U	Q	U
Z	1	3	1	1	1	1	1	1	1	1
I	2	1	3	3	2	4	9	9	9	7
H	5	8.5	2	2	3	2	3	3	3	3
J	3	2	5	4	4	3	2	3	2	2
S	4	5	4	7.5	6.5	9	4	3	6	5
O	7	8.5	6	7.5	6.5	7	7	7	5	9
M	9	7	7	10	8	10	5	5	4	4
E	8	6	9.5	9	5	5	10	10	7	9
K	6	4	8	5.5	10	6	8	8	10	9
V	10	10	9.5	5.5	9	8	6	6	8	6

TABLE 9

Intercorrelations Between Five Creativity Measures – Arlington School

Quantity Scores

	Part II Alternate Uses	Part III Similarities	Part IV Pattern Meanings	Part V Line Drawings
Part I – Instances	.838	.854	.534	.609
Part II – Alternate Uses		.926	.705	.769
Part III – Similarities			.670	.817
Part IV – Pattern Meanings				.929

Uniqueness Scores

	Part II Alternate Uses	Part III Similarities	Part IV Pattern Meanings	Part V Line Drawings
Part I – Instances	.559	.394	.023	-.032
Part II – Alternate Uses		.899	.480	.665
Part III – Similarities			.533	.796
Part IV – Pattern Meanings				.886

to be between verbal measures or between visual measures as was the case with Q scores but with one obvious exception. This is the relationship between performance on the test of instances and the test of similarities. This finding will be followed up in the data obtained from students in the next year's program at Arlington School.

COGNITIVE STYLE AND CREATIVITY

Considering now the relationship between cognitive style and creativity, Table 10 summarizes the relevant information. There is for Arlington School a generally greater relationship between creativity and cognitive style variables than is evident for Newton. Making some adjustments for the smaller size of the Arlington sample, it nevertheless seems clear that Arlington students show a significantly more stable relationship between reflection and creativity than do Newton students. However, the relationship between cognitive style and Part IV, the test of pattern meanings, indicate a greater tendency among Arlington students for impulsivity to correlate with creativity. This suggests the possibility that creative handling of verbal and visual material may be facilitated by differing cognitive styles.

It is difficult to base an explanation of these findings on differing variances within the populations. There is no stable, consistent tendency for either school group to vary much more than the other on either the creativity and cognitive style measures. It does seem to be the case that Arlington students show more variance in MFF and HVM errors than do their Newton counterparts, while Newton students show a somewhat lesser tendency to vary on time, i.e., more variance on MFF and HVM palpation time. On the creativity measures, Newton shows a consistent tendency to have a greater variance on quantity (all three measures) while the Arlington students have a greater spread on two uniqueness scores, instances and alternate uses.

In general, Newton students show very little relationship between creativity and cognitive style as measured; Arlington students demonstrate much more, with almost a two-to-one tendency towards linking reflection and creativity.

It is stressed again that the findings so far regarding relationship between creativity and cognitive style are tentative. The small number of students in the two schools on whom both creativity and cognitive style data were complete limits interpretations to statements of trends and suggestions.

Further data will be available when the project enters its third year of operation 1967-68. At that time, more final conclusions will be possible.

For the present, the information gathered will be used in the evaluations of the impact of the various experimental curriculum units on students, both individually and as members of a group. In the next chapter the educational implications of these basic processes – cognitive style and creativity – will be examined in the concrete by way of the actual materials and teaching methods tried out in the demonstration classes. Next, some highly tentative speculations on the connection between cognitive style and type of emotional illness will be offered.

COGNITIVE STYLE AND EMOTIONAL DISORDERS

The psychiatric case records of nine students who had completed the cognitive style measures were examined and summarized. Eight completed all tests, while the ninth took only the MFF test. The z-scores for the five sub-scores obtained on the MFF tests and HVM tests were averaged in order to obtain the label "reflective" or "impulsive" for each of the nine students. Earlier mention was made of the strong trend toward significant intercorrelations

TABLE 10

Intercorrelations Between Measures of Creativity and Cognitive Style
Arlington School and Newton High School

	Cognitive Style				
	T	E	T	T	E
	MFF	MFF	HVM_1	HVM_2	HVM
Creativity	Arl. (Newton)		(Palpation)	(Decision)	
Part I	N=8 N=13				
Instances-Q	.533 (-.205)	-.302 (-.216)	.774 (.237)	.121 (.113)	-.457 (.143)
Instances-U	.427 (-.132)	-.488 (-.248)	.834 (-.038)	.123 (.331)	-.421 (-.253)
Part II	N=8 N=13				
Alternate Uses-Q	.322 (.278)	.617 (.234)	-.465 (-.002)	-.230 (.120)	-.133 (.359)
Alternate Uses-U	.524 (.254)	.292 (-.018)	-.055 (-.158)	-.087 (.102)	-.540 (.294)
Part IV	N=6 N=12				
Pattern Meanings-Q	-.187 (-.019)	.096 (.131)	-.058 (.110)	-.407 (.299)	-.352 (-.066)
Pattern Meanings-U	-.314 (.001)	.010 (.161)	-.022 (.072)	-.609 (.280)	-.547 (-.023)

among the cognitive style measures. It is also the case that for these nine students there was for each one of them a 4-1 ratio of scores such that the "impulsive" student, for example, had four z-scores in that direction and only one "reflective" z-score. The ordering of the students along the reflection-impulsivity continuum is as follows:

Student	Score
I	1.190
E	.740
N	.659
F	.532
D	- .282
G	- .421*
H	- .521
M	- .616
B	- .622

Positive scores indicate reflective direction

Negative scores indicate impulsive direction

* (Did only the MFF)

The students can be divided roughly into two groups on the basis of the predominance of impulsive or reflective scores. In what follows the "reflectives" are the four students with positive scores, and the "impulsives" are those with negative scores.

All four of the reflective students are described in hospital records as manifesting schizophrenic or schizoid characteristics. None of the five impulsive students are so described. Moreover, there is no consistency in the major diagnostic category among the impulsive groups. Two were described essentially as hysterical personalities. Another is seen to be primarily an adolescent adjustive problem, and little is really said by way of a formal diagnostic label about the remaining two beyond a specific note on one student-patient to the effect that there is no evidence of psychosis. The other was hospitalized for chronic alcoholism and problems in social behavior.

While the data are clearly not strong enough to make definite statements at this point regarding the relationship of reflection-impulsivity to psychiatric disorders, several interesting speculations can be ventured which will be pursued next year with a larger group of students and with a more systematic examination of relevant clinical and personal background information. Psychosis seems to mark the reflectives with neurotic disorders being more characteristic of the impulsives. Furthermore, in this sample of four reflectives, three of the four are described as manifesting paranoid features. Silverman in his work on the attentional states of schizophrenics has concluded that schizophrenic patients with paranoid trends are able, willing, and even eager to attend much longer than other schizophrenics. He puts it this way: "The defensive maneuvers of the pre-paranoid thus dispose him to constantly scan environmental input for possible threats to self-esteem, and to deal with such threats by selectively examining and translating their meanings."

Following this line of interpretation, it is worth noting that there is no explicit indication of any paranoid tendencies in the clinical summaries of the five impulsive students. The data from the 1967-68 student group should help to clarify the relationship between schizophrenia, paranoia, and reflectivity hopefully by providing students who are diagnosed as either schizophrenic or paranoic, but not both. Until then, no more conclusive statements can be made.

LANGUAGE

In studying the language of emotionally disturbed adolescents there were both practical and theoretical goals. While the primary purpose of the project was to develop specialized curricula, it seemed worthwhile to look for answers to real general and theoretical questions. Since language is so crucial in academic learning, information about the student's level of language functioning should be an invaluable aid to curriculum development.

From the standpoint of theory the question was asked if an emotionally regressed patient would also show his regression in purely linguistic ways. Most of the tests employed during the first year of the project had previously been given to a large group of small children and to a control group of students at the Massachusetts Institute of Technology. The areas under consideration were word association, etymology, and definition of vocabulary words. The results of the tests did not reveal clear-cut indications of linguistic regression.

The effort of the past year in language was to determine whether there might be significant syntactical characteristics of the language of the emotionally disturbed. Analysis of writing samples of the students showed that the syntactical structure of their written language apparently has not been impaired by emotional disturbance. The next aims in the language area are to concentrate on semantic problems and a quality of language noted by the teachers. This is the elliptical quality of much of their written and spoken work. It appears to be a major difference between these students and normal ones and is a highly significant one for a teacher working with them to be aware of. A student would almost certainly be failed in the normal classroom, since the teacher would equate the skeletonized expression of his thoughts with his actual knowledge and fail him without further concern. In the small classes of Arlington School the teacher has been able to stop the student and ask him to fill in. This was possible to an even greater extent when instructional interviews were used. This level of communication seems very akin to descriptions of schizophrenic language, when a single word carries a whole sphere of meaning, affect and global significance. While here the students appear to us to be in contact with classroom reality, the manner of expressing their thoughts is not. It also is reminiscent of Piaget's description of young children's egocentricism when it does not occur to them that adults cannot read their thoughts.

To summarize, then, the approach of the project is to join assessments of student learning characteristics derived particularly from a correlation of cognitive style, creativity, and language with instructional materials and procedures based on these assessments. In the next chapter the experimental curriculum units will be described.

PART III

Classroom Learning: the Experimental Curriculum Units

Demonstration classes in English and History were selected to provide opportunities to focus on specific aims of the project. In both areas the experimental curriculum units were developed to sensitize and activate the student's cognitive skills through tasks and exercises embedded in subject matter material. This special emphasis on intellectual operations requires a few words of explanation to set it in its proper context.

Current educational practice, in general, is seriously deficient in providing children with experiences which deliberately demand genuine problem-solving and creative thinking. Crutchfield (1966), one of the many responsible critics of the present-day educational scene, describes in part what he calls the all-too-typical school situation:

> In short, the child . . . is being expected to develop efficient cognitive skills, such as those in problem-solving, under conditions where he is offered few opportunities for actual practice of the skill, where the practice he does get is likely to consist of tasks that are too easy, too repetitive, and seem meaningless and trivial to him, where he is often rewarded for low-level performance on these tasks, where he gets incomplete and delayed evaluative information about how well or poorly he is doing and little specific indication of just what he is doing right and what wrong. It is clear that no respectable athletic skill could be developed under such bizarre handicaps (nor would any coach countenance them), and it is doubtful that any complex cognitive skill could be so developed.

While intellectual training obviously is not the sole purpose of education, the main thrust of the project came from the basic point of view that an education to be genuinely meaningful must include this component. This is not to say that education is not concerned with the development of ethical responsibility and emotional responsiveness. It is possible by a one-sided education to produce a human intellectual machine, sterile emotionally and irresponsible ethically. On the other hand, self-determination and commitment to a meaningful life involve range, flexibility, and adaptability of intellectual processes. The school is specially or uniquely charged among the many agencies that contribute to educational objectives to help a child to develop his rational powers. In this conceptualization of education as process and product, coverage of subject matter is not equated to training in the use of the mind.

If it seems to be the case, as Crutchfield points out, that in regular schools there is need to improve curriculum materials and teaching techniques that will foster cognitive skills, then it is even more imperative in schools for the emotionally disturbed. For these are students who have difficulty in learning and thinking because of the disruptive effects of their emotional difficulties. Because the number and magnitude of these learning problems can easily exhaust the teaching repertoire of even the most resourceful teachers, educational programs for the emotionally disturbed frequently fail to engage students in any real intellectual sense.

The curriculum units to be described were developed around a number of cognitive problems which had been identified as persistent hindrances to effective learning. These difficulties in cognitive functioning, together with the concerns for cognitive style and creativity discussed earlier, formed the basis for the design of these units. The major objective was to produce a generic program of cognitive learning which could be applied in any subject area. It was also planned to construct transposable units within the subject matter area so that they could be used in different courses of study at different grade levels.

Since the English and History materials were addressed to the same set of learning difficulties, these problems are presented now by way of a general orientation for what follows in the discussion of the specific curriculum units:

1. Organizational Difficulties
    a. Difficulties in summarizing, condensing, compressing
    b. Difficulties in separating the essential from the non-essential
    c. Difficulty in relating abstractions in coherent larger blocks
2. Cognitive Inflexibility
    a. Egocentrism: seeing things only from personal frames of reference
    b. Inability to view ideas multidimensionally
3. Difficulties in Maintaining Cognitive Direction
    a. Problems in following complex sequences of people and events
    b. Marked day to day fluctuation in cognitive style
5. Difficulty in Recognizing Affective Mood and Tone
    a. Tending toward literal content interpretations
6. Need for Continuous Intellectual Support

Also for the purpose of general orientation, the goals in mind for the extensive use of visual materials in both English and History should be noted here. In brief, visual materials were used:

1. To stimulate interest through the novelty and surprise elements of pictorial material introduced specifically to encourage thinking with visual signs.
2. To give concrete, specific meaning to abstract terms or events.
3. As perceptual training tools in searching for information.
4. As an evaluative tool in assessing the student's level of

intellectual functioning and for the identification of any special problems he might be having in perceiving, organizing, and carrying out assigned intellectual tasks.

5. As a creativity training tool in that visual media can provide a more "open-ended" response situation than written materials.

How the concerns with specific cognitive learning difficulties and cognitive processes were actually translated into curriculum units will be considered next.

THE ENGLISH CURRICULUM UNITS: CONTENT, PROCEDURES, AND EVALUATION

Materials and instructional procedures were developed within the framework of four major units:

1) Humor and Satire Unit
2) Perceptual Training Unit
3) Theme Reading Project

Each of these units serve somewhat different educational objectives, but all are tied together with a common concern for teaching, improving, or activating through training the basic processes involved in mastering the academic content and linguistic skills typically included in a high school English curriculum.

An eleventh grade English class, consisting of eight students, was chosen to continue the work of the previous year on humor and satire, and theme reading. In addition, the same class appeared to be suitable for the new materials and techniques which were designed to give perceptual training on one art form (painting) in order to facilitate similar perceptions in another (poetry and prose). Through out the year special units were tried out in a twelfth grade English class and an advanced creative writing section, but the bulk of the experimental material was tested in the eleventh grade English class. In total, approximately thirty students had some experience with the project designed materials and processes. However, intensive evaluation in the present report will be limited to the students enrolled in eleventh grade English and their counterparts at Newton High School.

Humor and Satire Unit

In choosing humor and satire as the basis of reading for an entire course, the primary objective was to help the students to see statements and events in more than one way. Both satire and humor involve complicated points of view where the author is detached from his material and playing with his audience's response. In learning to read this material, a student becomes aware of narrative irony, changes in tone and changes from comic to serious. These same "shifts" are present, of course, in "straight" literature, but here they are more accessible. The student can feel comfortable with techniques which are really advanced reading skills without becoming too "literary" about it.

The teaching of satire, then, is essentially the teaching of an advanced reading skill. The student needs to be aware of tone and he needs to exercise his critical faculty at every turn, for, in order to read satire, the reader needs to be continuously translating the signals he receives. He cannot merely absorb or memorize them and still get the meaning. The author does not mean what he "says" – he means something else.

Humor, too, involves a kind of intellectual activity more or less conscious, very similar in its nature to reading satire. Reading humor is very different from the intellectual activity required to memorize a French conjugation or to understand a Volkswagen manual. To "see a joke" one must see two things at once, or at least see the possibility of more than one point of view. Humor is, therefore, an excellent vehicle for dealing with the problem of developing cognitive flexibility.

Moreover, it was assumed that humor is intellectually and emotionally important to the students. Working from the premise that the return of a "sense of humor" may be a sign of recovery in a patient, the work in humor gives exercise in the kind of thinking that the patient-student needs in his life. The aim was not teach a sense of humor to people who have none; rather it was to cultivate the exercise of that sense. As to the relationship of humor to literature, there seem to be no humorous themes but only humorous treatment of the same themes that flow in all literature.

In general, insights into cognitive functioning and learning about humor and satire were derived from various sorting devices especially designed to reveal cognitive flexibility, variability of humor appreciation, and the relationship of creativity to intellectual functioning.

A brief description of a sorting device as a research tool is worth noting here. Sorting methods can be used with verbal materials, pictorial materials, or three-dimensional objects. They have been used by psychologists primarily as ways of studying how individuals organize – in effect conceptualize – their experience. Concept attainment is, of course, a singularly relevant concern of educators. Among the variations in sorting method are:

1. **Free sorting.** The subject is presented with an array of stimulus materials; e.g., a pack of picture cards, sets of objects, and is asked to sort them any way that seems best to him. There are no limitations of time, number of piles, or number of concepts. The only stipulation is that at the end of his sorting the subject tell the experimenter the basis on which he arranged his groups.

   The experimenter records the basis for each pile, as told to him by the subject, the total number of piles with the number of cards in each, the total length of time from beginning to end, and any comments made by the subject which indicate his thought processes or emotional reactions to the task.
2. **Sorting to a Specified Number of Groupings.** A structured sort is provided by giving the subject an array of stimulus materials and telling him to sort them into a given number of piles. In contrast to the method just described where he is told that there is no right or wrong way of performing, it is now clear that there is a standard he is expected to meet. The same types of data are recorded as above.
3. **Sorting to Sample.** The subject is shown several sample cards and is instructed to sort the rest of the cards to these

> cards, which are left in front of him. This method provides him with structure and perceptual support in a way that the other two methods do not.
>
> For any of these methods the subject may be asked to shift the basis of his sorting. By asking him to find a different way to sort the materials than the one he has just used, the experimenter gets an indication of the rigidity or flexibility of the subject's approach to the task of categorizing.

In the Humor unit **Cartoon Sort I** was designed to yield data on cognitive functioning and categorizing behavior in particular. Students were given 24 cartoons to deal with in two different ways: 1) a free sort and 2) a sort according to type of humor, **irony** or **satire**. Prior to this exercise, students had received class instruction in reading and writing irony and satire. The cartoon sort was, therefore, also a training device supplementing the verbal work and extending the use of humor concepts to pictorial materials. Several examples of cartoons used in this sort are shown in Figure 1.

Student responses to **Cartoon Sort I** can be evaluated by determining category breadth, student preference for descriptive vs. interpretive reactions to the cartoons, ability to categorize the cartoons according to irony or satire, and the amount of time taken to perform the various tasks involved.

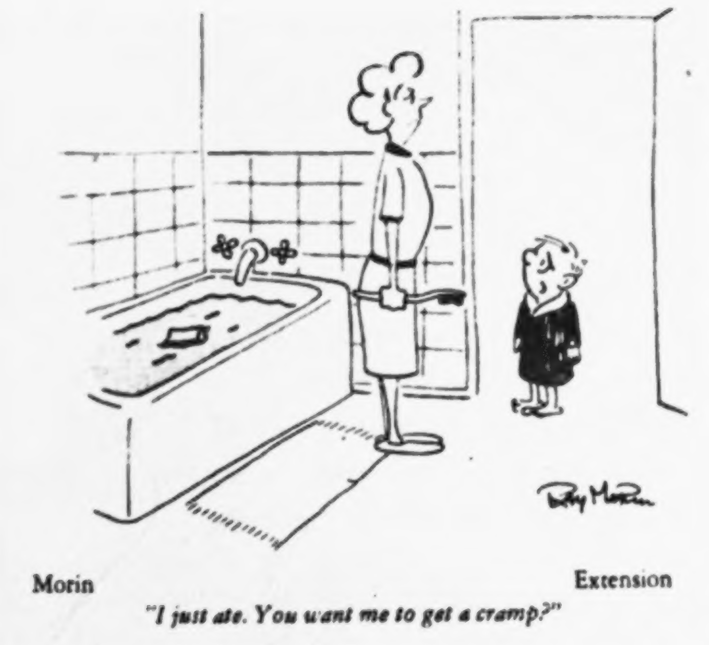
In the free sort, students were asked to sort the cartoons as they chose, using whatever principles of humor they had been studying. They sorted and wrote the reasons why they grouped certain cartoons together. These reasons, the defining criteria for the established categories, were then classified in three ways: (1) a **descriptive** category which indicates that the student is responding merely to the perceptual details of the cartoon, for example, **a man alone, adult talking to adult**; (2) the interpretive which moves beyond what is seen to an expression of affect, for example, the student finds the cartoon funny or not funny or the cartoon is too obvious or too bland; and (3) a **miscellaneous** category.

What did this sort yield in the way of cognitive style and functioning? It is clear that the four Arlington students on whom data were obtained varied on the dimension of category width. Two students organized on a broad basis, using three and five categories, and each of the other two sorted to eight groups. There seems to be a relationship between the number of categories a student uses and the tendency toward descriptive responses, that is, the larger the number of categories, the more descriptive rather than interpretive is the basis of the categorizing. In this task the ability to form wider categories appears to involve a higher level of cognitive functioning because the categories are based on criteria which go beyond mere perceptual detail. In other words, students can be ranged along a continuum of cognitive sophistication even on this one task.

Turning to the sort to type of humor in **Cartoon Sort I,** a task requiring the student to place the cartoons in the predefined categories of irony, satire, or unassigned which essentially was a "don't know" category, the findings can best be described as inconsistent. One broad categorizer on the basis of the free sort attempted to apply requirements for what was considered an instance of irony or satire. The opposite was the

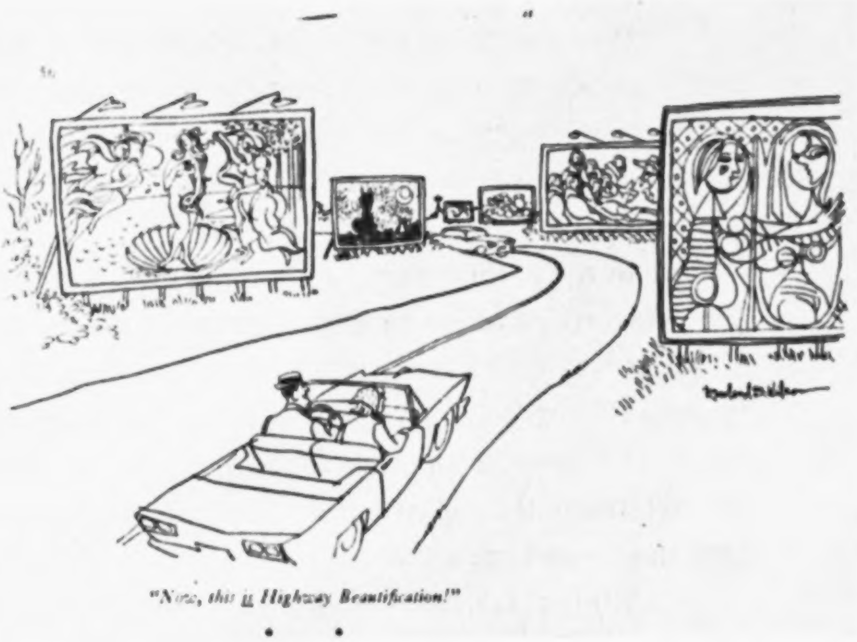
CARTOON SORT

(Figure 1)


Morin
Extension

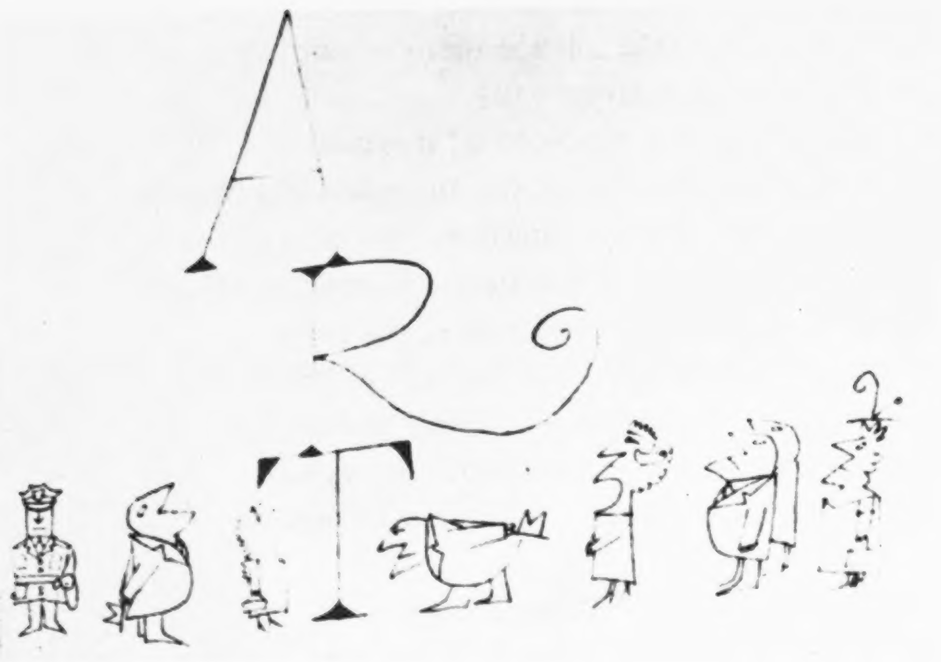
"I just ate. You want me to get a cramp?"

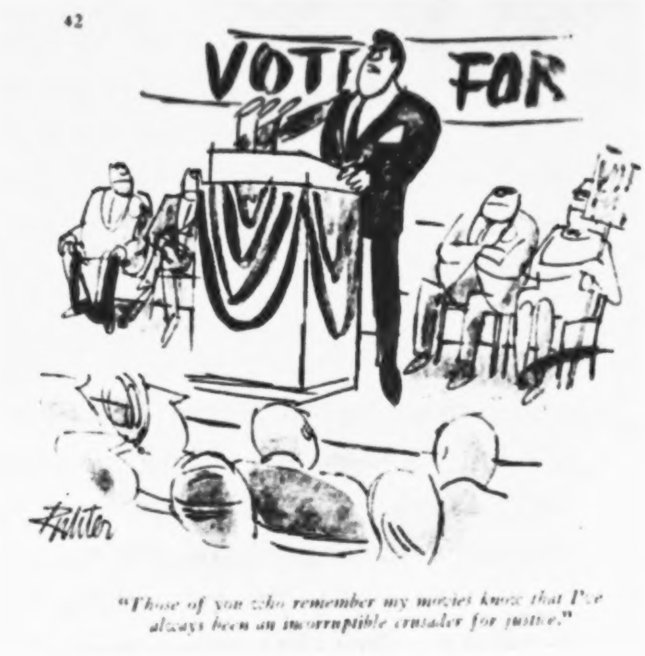
Satire



"Now, this is Highway Beautification!"

Irony and Satire





"Those of you who remember my movies know that I've always been an incorruptible crusader for justice."

Social Satire

case for another broad categorizer who in the sort to type labelled relatively few cartoons as either irony or satire, assigning the greater number to the unassigned category. Similar inconsistency was noted with narrow categorizers on the free sort. Since the number of students on whom these sorting data were available was so small – four students – nothing of real substance can be said about consistency, or a lack of it, in categorizing behavior from unstructure to structured tasks, i. e. from a free sort to a sort to type of humor. What is interesting at this point is the possibility of determining through a technique such as a cartoon sort whether an individual is stable in the way he categorizes over a range of tasks or whether there is evidence of cognitive flexibility in relation to the degree of structure in the type of task presented.

Cartoon Sort II was devised to study several questions. Do emotionally disturbed adolescents show less appreciation of humor than normal adolescents? Do emotionally disturbed adolescents respond more to the affective dimensions of humor as compared to the cognitive aspects than normal adolescents? Is ability to appreciate humor related to creativity? Examples of the 41 cartoons contained in Sort II is shown in Figure 2.

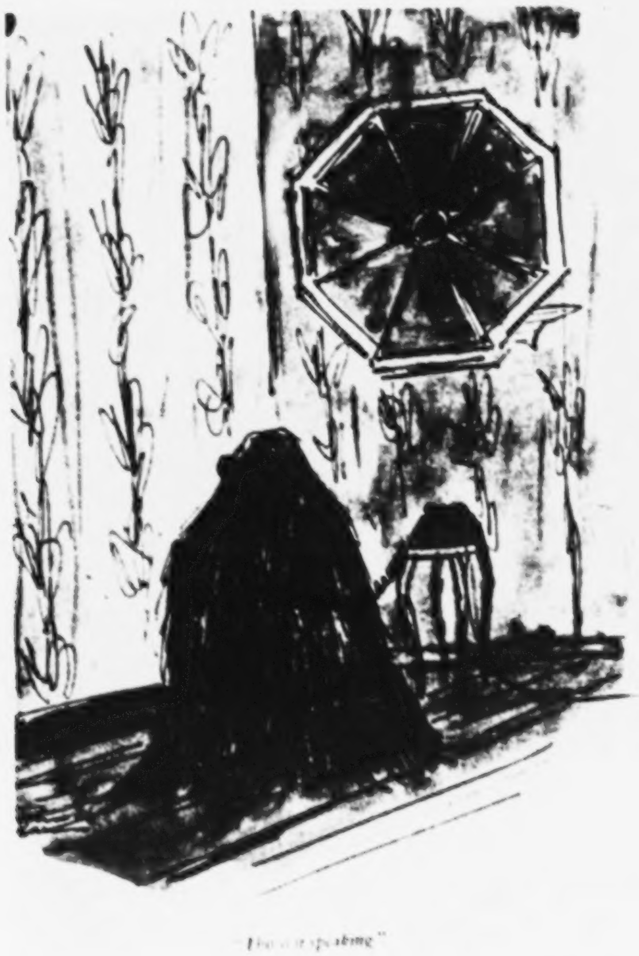
Two different sorts were obtained from a group of five Arlington School students and four Newton High School students. The first sort involved placing the cartoons into groups of **Like, Dislike,** or **Don't Get**. The second sorting required a grouping of the 41 cartoons into two categories, intellectual and non-intellectual. From the results of these two sorts come tentative answers to the three questions just raised.

As to the first question, the matter of humor appreciation, Arlington School students disliked twice as many cartoons as they liked. On the other hand, the Newton students liked just as many as they disliked. This finding is in keeping with the preliminary inquiries or Levine and Abelson (1958) into the sense of humor of individuals as a personality trait and as humor behavior. They compared two groups of male young adults, undergraduate college students and psychiatric patients in a Veterans Administration Hospital with respect to two aspects of humor, the ability to be humorous and the ability to appreciate humor. The second aspect was the one of relevance to the project. It was found that on the basis of ratings given to 31 cartoons from "Dislike very much" to "Like very much" according to a 5-point scale, college students significantly liked more cartoons and disliked fewer than the psychiatric patients. While the present project involved only a few students, the results lend support to the idea that there is a relationship between emotional state and adjustment and the ability to appreciate humor. Arlington School students on the average gave 13 of the 41 cartoons a **Like** rating while the normal control group rated an average of 20. In addition, Arlington School students showed a wider range of humor appreciation within their group with one student liking as few as 3 cartoons and another as many as 24. In Newton the number of cartoons liked ranged from 11 to 24. While the statistical significance of these differences was not determined, their direction supports the Levine and Abelson findings that emotionally disturbed youth tend to appreciate humor less than do their normal counterparts. It should be remembered that there are forms of psychosis – hebephrenic schizophrenia, for instance – in which there are excessive, albeit inappropriate, humorous reactions.

The second question was approached througha sort of the 41 cartoons into two categories, intellectual and non-intellectual. To relieve the ever present student fear of

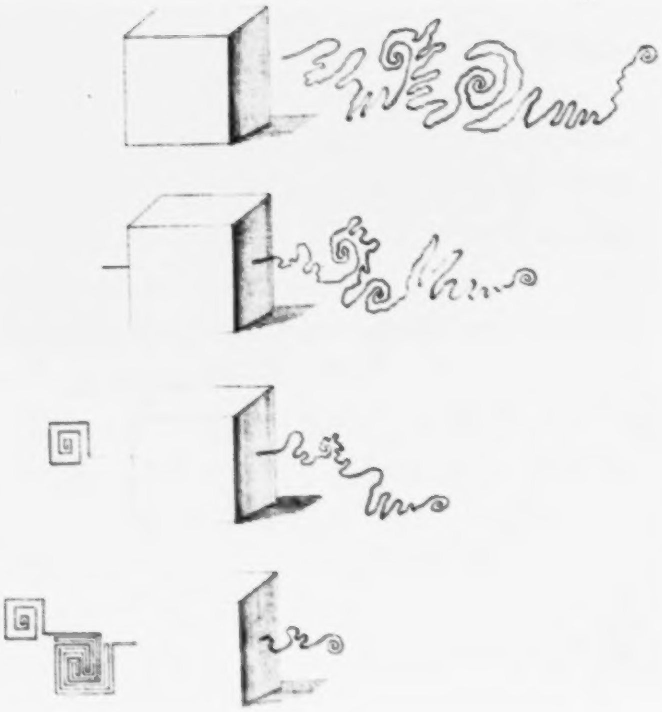
CARTOON SORT II
(Figure 2)

A.



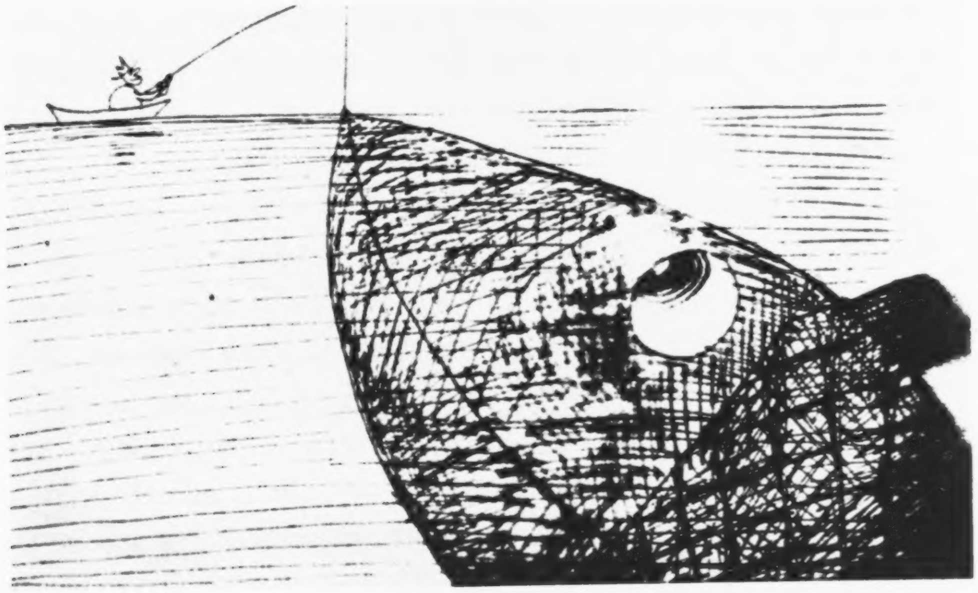
Arlington- non-intellectual
Newton- non-intellectual

B.



Arlington- intellectual
Newton- intellectual

C.



Arlington- intellectual
Newton- non-intellectual

"psychological prying" and to incorporate the exercise into the on-going classroom humor unit, the terms non-intellectual and intellectual were substituted for the terms affective and cognitive. It was felt that this semantic substitution was permissible within the usual range of meaning attributed to the four words. The results of this sorting were looked at in two ways. Arlington students were compared with Newton students in relation to the number of cartoons considered to be intellectual (cognitive) and non-intellectual (affective). Then the individual student ratings of **Like** and **Dislike** for each cartoon were paired with the identification of the cartoon as intellectual and non-intellectual to get at what may be a link between humor and anxiety. Levine and Abelson in another study of humor as a disturbing stimulus found that psychiatric patients not only disliked significantly more humorous cartoons than did the control subjects but that they also expressed less positive mirth towards the cartoons, with an anxiety group of patients expressing the least mirth.

Certain trends in the data were noted despite the small number of students involved. Arlington students classified more cartoons as non-intellectual than did the Newton students. This finding is consistent with what Flugel has called a disproportionate response of mental patients to the "orectic" (i. e., affective and conative) aspects of humor relative to purely cognitive aspects. One implication here is the almost commonplace notion that the emotionally disturbed adolescent tends to read emotional significance into material more often than his normal, undistrubed counterpart.

Considering the degree of **like** and **dislike**, the general finding mentioned earlier that disturbed adolescents do not find as much to be amused about in cartoon material is further differentiated. They dislike rather than like over twice as many cartoons they specify as non-intellectual (affective), but dislike rather than like only a few more of those cartoons they designate as intellectual. Newton students show more dislike than like of non-intellectual (affective) cartoons but only on the order of less than half as many. With intellectual (cognitive) cartoons they like rather than dislike more than twice as many.

The affective category appears to differentiate both groups of students among themselves, but much more markedly amont the Arlington students. The exploratory work of Levine and Abelson indicating the vulnerability of psychiatric patients to disturbing cartoons is supported by the project data.

On the basis of even these preliminary and limited sample findings, further work along the line of relating sense of humor and emotional adjustment is definitely encouraged.

The question of a relationship between humor and creativity was dealt with by comparing the **Like** and **Dislike** score with a student's **Uniqueness** scores on the creativity measures described in Part II of the report. Among Arlington School students, high creativity is associated with a higher number of **dislikes** than **likes**. Newton High School students, on the other hand, show the reverse, that, is, students scoring high on creativity measures tend to like more cartoons than to dislike them. One inference that might be drawn from these results is that the emotionally disturbed student who is creative is able to see more clearly the disturbing nature of much humorous material. He can more readily perceive the flaunting of cultural restrictions that is basic to the humor in many of the cartoons. Therefore, he may evidence more of a dislike than a liking for this kind of material, perhaps because of the discomfort of increased anxiety.

Perceptual Training

Training in perception was introduced in selected English classes as a technique for instruction in cognitive flexibility and cognitive functioning as these processes particularly relate to the interpretation of poetry.

Teachers had observed that students either could not or would not probe for deeper implications of a poem, a story, a cartoon or even a picture. They did not attempt to analyze a work into constituent elements and to see the network of interrelationships. The problem seemed to be partially one of not looking long enough to see as much as there is to see in a work, but it appeared to be also a problem of viewing a work from a subjective, typically narrow point of view. The hasty look and restricted frame of reference led to sketchy, vague impressions of material. Difficulties in retention, application, and generalization were frequent outcomes of this poor initial learning. Training in perception was therefore introduced to help students to learn to look, and to look moreover for the structure of material.

The training made use of both visual and verbal material. For the visual training two basic structural components of graphic art were determined, **utilization of space** and **directional force.** In the description that follows, references to these components will be made to the pairs of pictures appearing in Figure 3. Space in the graphic arts can be used in a number of ways. It can be broken into **large** or **small** areas simply by the use of one or more lines, **(Seated Women).** Space can be filled with large or small objects, several or few objects. Brush strokes within these areas can be large or small **(Bridges).** Each one of these structual sub-elements creates a different effect depending upon its relation to the other parts of the picture. If space is divided equally, symmetry and balance are created. If space is divided unequally, one side becomes dominant and the other secondary.

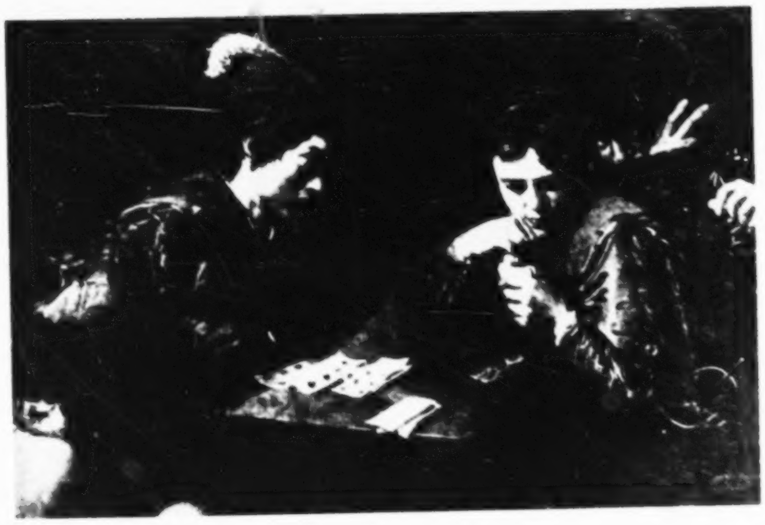
Directional force is produced by line, objects and the brush strokes in relationship to each other. If this force is horizontal, it is parallel with the edges of the picture space and also parallel to gravity itself **(Last Supper,** left and **Battle Scene,** right). Usually, the effect is one of repose and tranquillity. If the directional force is diagonal, it is straining against the planes of the picture and against the pull of gravity. The resulting effect is usually one of tension, of movement, **(Last Supper,** right and **Battle Scene,** left). The purpose of the perceptual training unit with visual materials was to train students to see these elements in pictures, to see how they are related and to discover the effect of these relationships.

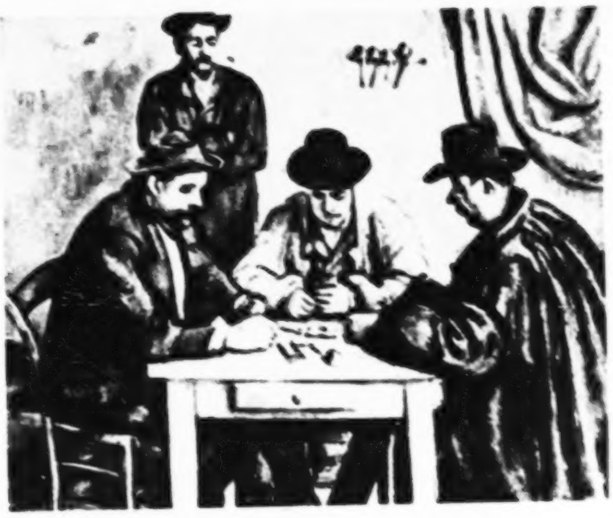
A carefully structured sequence of 20 pairs of pictures was presented to the students. At the beginning of the sequence, one of the two variables – space and directional force – differed, while others were held constant insofar as possible. For example, if the aim was to concentrate on directional force, this dimension would be varied in the two pictures but the subject matter, the content, the large-small variables and the balance in the two pictures would be held constant. As the sequence progressed, more and more variables differed in the two pictures. As they went along, students were expected to be able to perceive more and more of the elements and to see their organization.

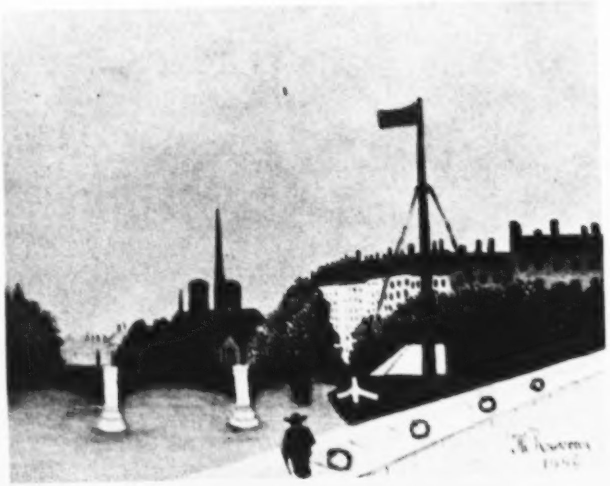
A working premise was that skill in "structural analysis" of pictures, and the relating of structure to emotional and intellectual effects on the viewer would be transferable to verbal material, the usual content of English courses. Beyond improving the students' ability to handle part-whole relationships in prose and poetry, it was further hoped that there might

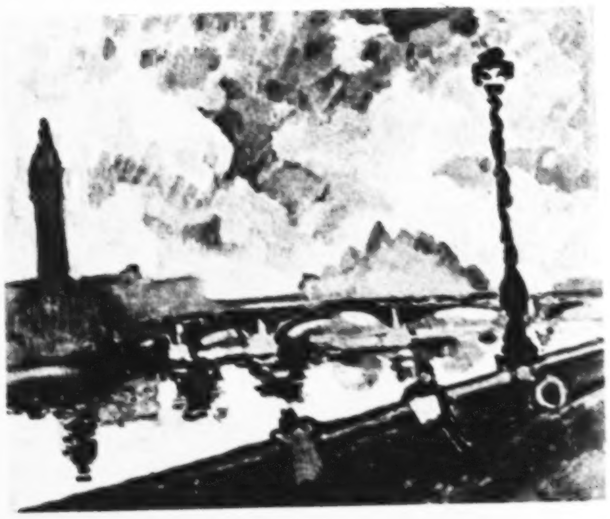
VISUAL TRAINING PAIRS

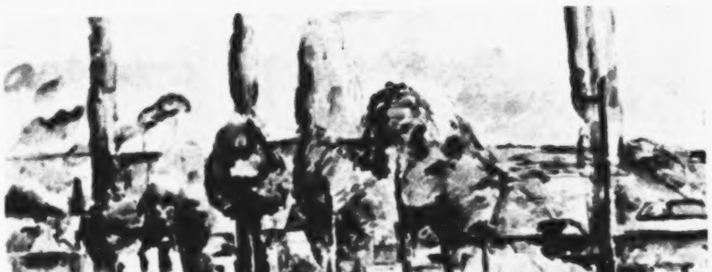
(Figure 3)

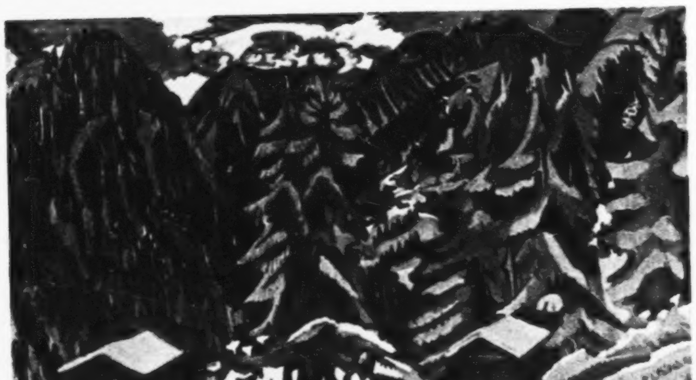


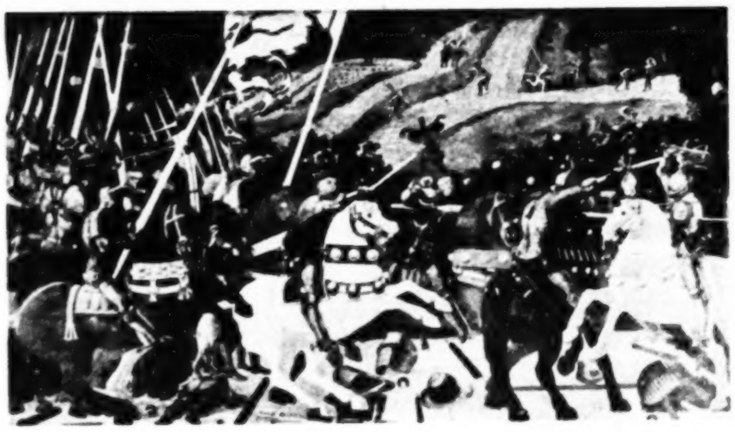


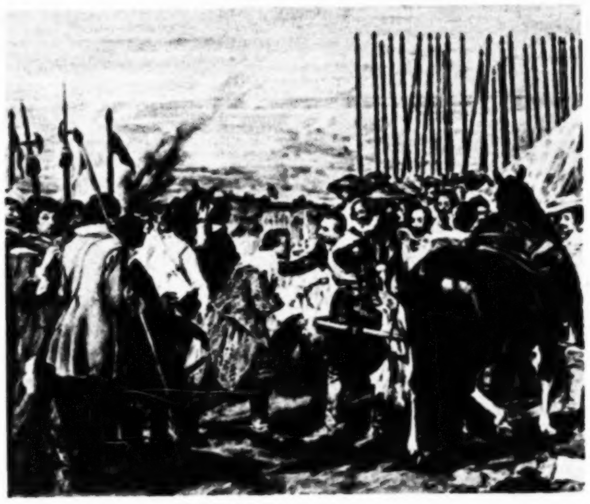


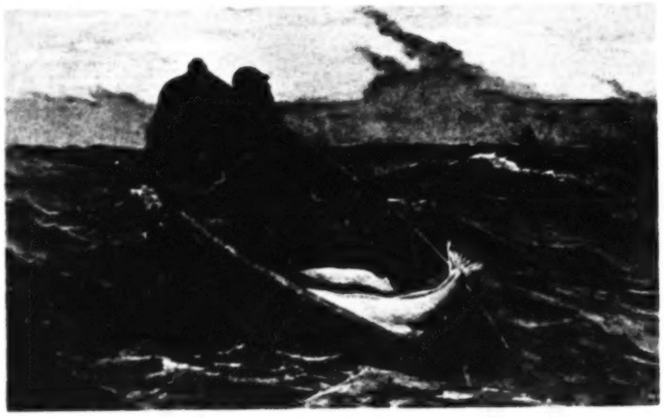


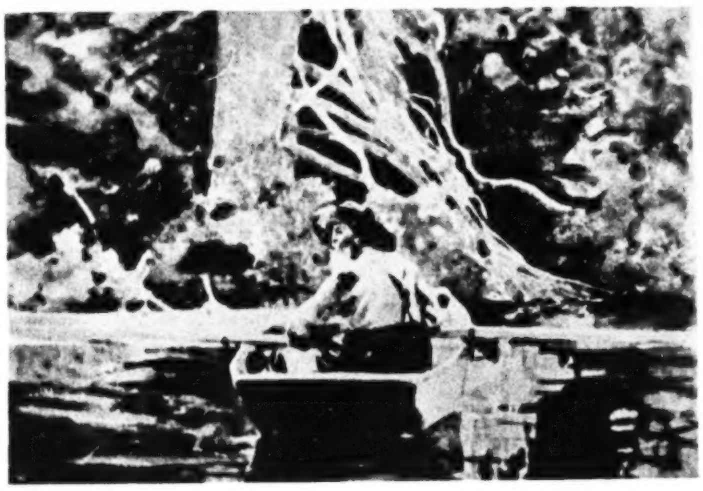


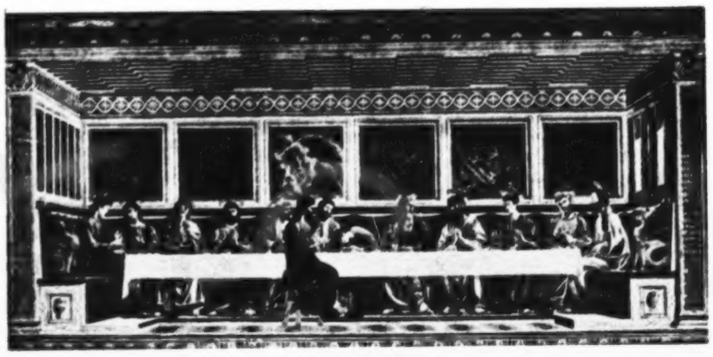


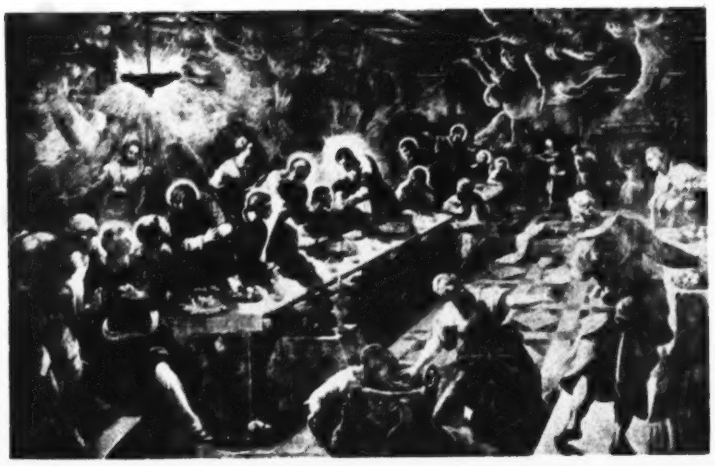


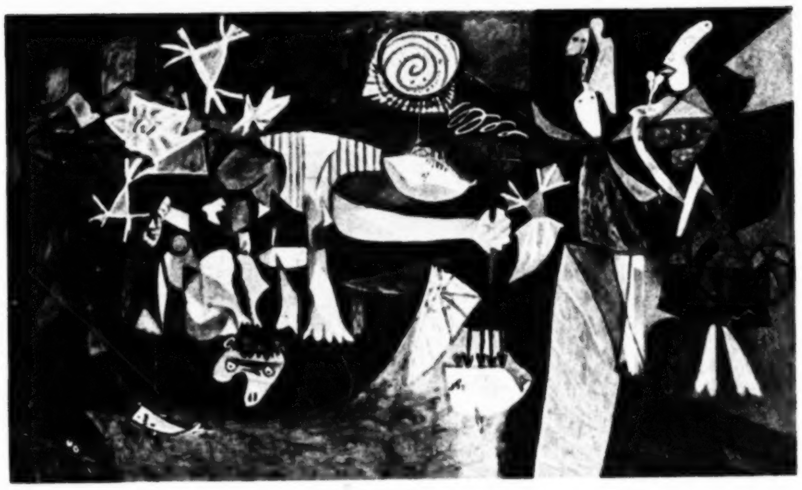


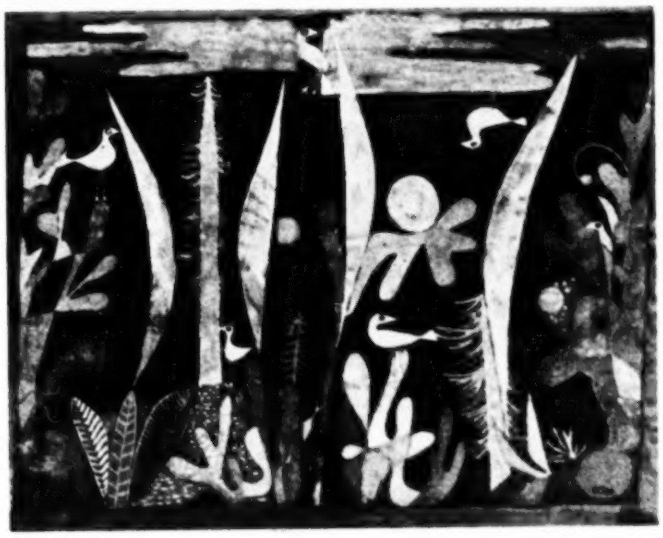


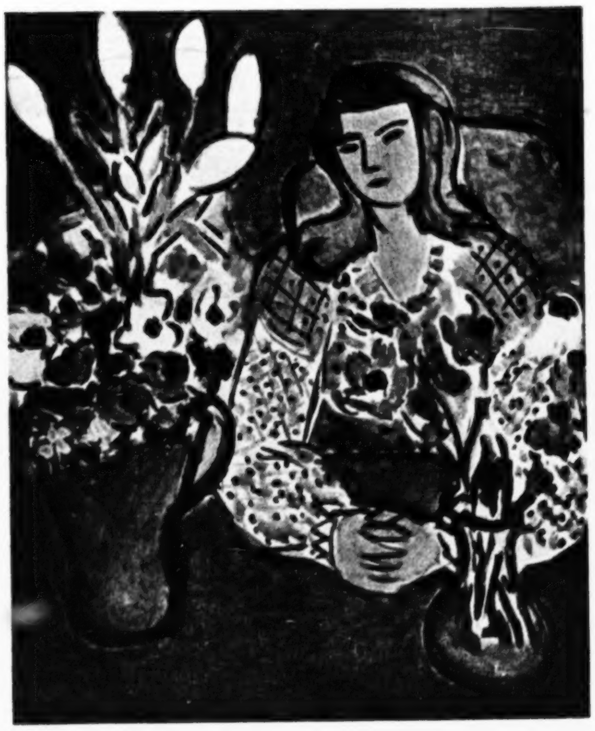


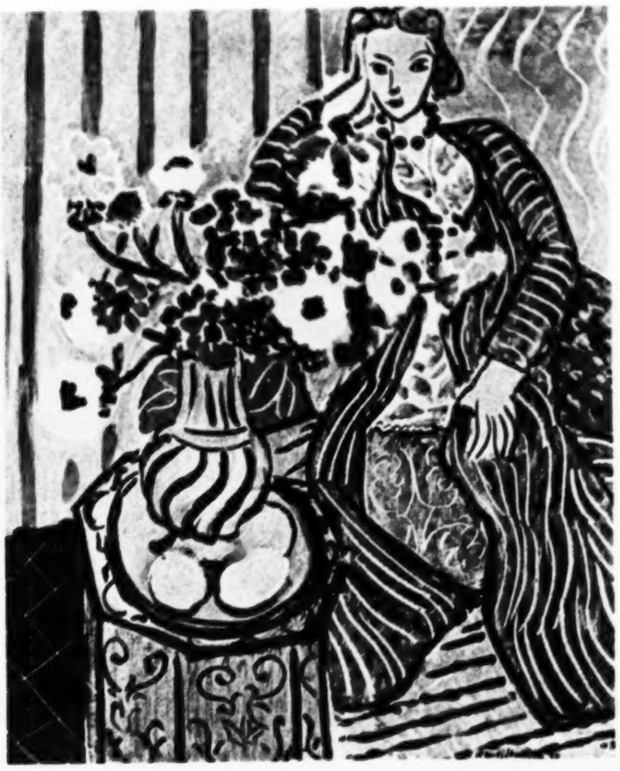












be improvement in a more generalized ability to deal with the organization of new situations. For the purpose of the project, however, the aim was to alert the student to the quality of structure in an author's work and to give him techniques for getting at that structure.

The verbal materials, composed primarily of poems, were paired, sequenced, and presented in the same way as the pictures.

The basic dimension selected for study was **rhythm**. Structural elements in poetry which create differences in rhythm are metre, rhyme, repetition, and length of line. Figure 4 (Snakes) illustrates differences in rhythm stemming from a dramatic contrast in length of line.

As in the visual training, only one element was varied at the beginning of the series while the subject matter, the content and the remaining elements were controlled in each pair. As the sequence of pairs progressed, more and more elements varied. The objective was to help the students to discover differences in rhythmic effects through variations in structual elements.

The training design can be outlined as follows:

1. Pre-Test Poem Aa "Spring" – Gerard Manley Hopkins

   Students were given the poem and the instructions "We're going to try out various ways at looking at literature. We want to know what you see in a poem. Say as many things as you can about this poem. Work for 10 minutes." The instructions were purposefully left unstructured so as to elicit as much as the student knew about the poem.

2. Visual Training

   Before the first pair was presented students were given a blank piece of paper. They discussed how space could be used and the different ways of breaking it up and filling it. Each student filled in his piece of paper. The teacher then discussed how the various students filled space. Training involved presentation and discussion of the 20 pairs of pictures in terms of the contrasting structual elements and their relationships to effect.

3. Mid-Test Poem Ab Fall 1961 – Robert Lowell
   Poem Pair E-F

4. Verbal Training

   Pairs of poems were presented in the same way on the pictures in the visual training. In each pair class discussion centered on effects in time and mood through variations in rhythm determined by the structural elements of length of line, metre, rhyme, and repetition.

5. Post-Tests Poem Pair X-Y
   Poem Ac
   Poem Aa Spring and Fall – G. M. Hopkins

Since the material itself was highly structured, the teacher's role in direct instruction was minimized. When a pair of pictures or poems was presented the teacher usually asked, "What is the difference in these two pictures (poems)?" If the answer concerned a difference in "effect" the teacher might ask, "How is the effect created?" and thus,

(Figure 4)

SNAKE

A snake! Though it passes,
eyes that had glared at me
stay in the grasses

A NARROW FELLOW IN THE GRASS

A narrow fellow in the grass
Occasionally rides;
You may have met him, – did you not?
His notice sudden is.

The grass divides as with a comb,
A spotted shaft is seen;
And then it closes at your feet
And opens further on.

He likes a boggy acre,
A floor too cool for corn.
Yet when a child, and barefoot,
I more than once, at morn,

Have passed, I thought, a whip lash
Unbraiding in the sun, –
When, stooping to secure it,
It wrinkled, and was gone.

Several of nature's people
I know, and they know me;
I feel for them a transport
Of cordiality;

But never met this fellow,
Attended or alone,
Without a tighter breathing,
And zero at the bone.

guide the students into an analysis of structure. If the answer concerns a structural difference, the teacher might ask "What effect does this difference have?" and thus lead them to a synthesis of structural parts. The teacher's role is constantly one of guiding the students into analysis and synthesis and vice-versa.

Each student had his own set of pictures or of poems, which allowed him to refer to the pictures or poems as much as he wanted.

Measures were taken at three separate points during the total cycle of training to determine the relative effectiveness of visual training and verbal training on ability to deal with poetry. A single poem Aa was used to evaluate general improvement from the total training and two single poems Ab and Ac were used to determine differential effects of visual and verbal training. The paired poems were the first and last pairs in the poetry training series.

An additional source of progress data were direct recordings made of student verbal reactions to both the verbal and visual material made in the classroom.

The perceptual training unit was given to four groups of students. Since results of training are analyzed in relation to the individual groups, a brief description of them is desirable. **Group 1** consisted of a regular class composed of 10 Arlington School juniors. The material was designed primarily for them. **Group 2** was a regular class of 7 Arlington School seniors; **Groups 3 and 4** were made by dividing a regular sophomore class at Newton High School in half with one half taught by the regular teacher, and the other half by a student-teacher. Each of these groups contained 12 students.

Student's responses to poetry and to pictorial material were classified according to a category system derived from a content analysis of total student responses. (Although no brief is made for the validity of the five categories representing a continuum from simple to more complex reaction, a **relational** response is held to be a more sophisticated cognitive process than is involved in the other responses since it requires the active analysis into parts of a whole work and the synthesizing of these parts into a specifically interpreted whole.)

The categories, with example responses, are as follows:

1. **Affective** – An expression of a like or dislike of the poem or an affective judgment of the work, e. g., "This is awful;" "This is nice."
2. **Content** – A response which concerns the subject matter or the representational element. This can be either descriptive or interpretative and generally is introduced by "This shows a young girl . . ." or "The poet is telling us that life . . ."
3. **Effect** – A global comment used to describe the general, overall effect of the poem, e. g., "This is active/quiet;" "This has a lot of life and movement"; "This is very peaceful and still"; "This is very dynamic."
4. **Element** – Specific reference to rhyme, metre, length of line, and repetition, spice, line, color.
5. **Relational** – A comment indicating a visible attempt to synthesize structural elements and their effect or structural elements and the content. An example of the first type of relation is "This poem has a regular rhyme scheme and a regular metre which creates a peaceful, quiet effect. An example of the second type if "The irregular length

> of line and the uneven pauses, indicated by commas makes it jumpy and popping, suitable because he's talking about flowers bursting out in spring."

The perceptual training data derived from both written and oral comments were coded according to the five categories by individual student group and expressed in terms of percentage of total response. Because of space limitation only highlights of the findings based on the pre- and post-test poems and on classroom verbal responses will be presented.

Table 11 shows by percentage of the total the volume of response to test poems in each category for the four student groups. In general, all students demonstrate fewer **affect** and **content** responses from pre- to final post-testing and more **effect**, **element**, and **relational** responses. Figures 5 and 6 display the group responses for the latter two categories. The increase was much more marked in both Newton groups for element responses, more noteworthy perhaps because they made very few responses of this type to the pre-test poem. From a fairly high level of **element** responses at the outset Arlington seniors increased slightly, while Arlington juniors comparatively beginning with almost 10% less **element** response achieved almost the same level as the Arlington seniors on the post-tests. This may well be a function of ceiling effect. An interesting result is the decrease in responses on the mid-test, that is, the test poem given at the end of the visual training, among the Arlington students. No change was noted in the Newton groups. Structural analysis of pictorial material does not appear to transfer to verbal material, and in the case of the Arlington students training in analysis seems to diminish temporarily at least the student's tendency to identify structural elements in poetry. Even the verbal training appears to depress the number of specific element responses when a new single poem is used. Only the same single poem used in the pre-test is there an increase and that comes only with the juniors.The basic aim of training, however, was not to train students in structural analysis alone; the objective was to help students identify the componentry of a work as a basis from which to arrive at a meaningful synthesis of parts into a whole.

Considering then changes in **relational** responses, the level of reaction desired in the handling of typical classroom material, the findings are clear. From a near zero point all groups show an increase with the Newton students demonstrating the greatest gains. For them, the combination of structural analysis in visual and verbal material paid off in increased ability to integrate elements into a meaningful relationship. The Arlington students' visual training had a definite impact. Gains from pre-test to mid-test occurred. The combination training did not do as much for them.

Classroom verbal responses show much the same picture. Figures 7 and 8 illustrate student comments in the **element** and **relation** categories at the beginning and end of the visual and verbal training cycles. The percentage figure is based on total responses within each cycle. With the exception of Arlington seniors, it is clear that all groups in terms of actual classroom performance tend to deal with both visual and verbal material structually and relationally. As pointed out earlier, this change does not carry over in a pronounced degree to transfer test poems except with Newton students.

What can be said by way of overall findings. First, it is clear that specific training in analysis has an effect, particularly with the lower grade levels. In fact, performance has a linear relationship with grade level when amount of gain is considered. Second, the combination of both visual and verbal training as presently designed by the project is required if the student is to analyze and synthesize literary material. Third, and this conclusion goes

TABLE 11

Perceptual Training Evaluation

Percentage of Total Student Response By Categories

Category of Response		Pre-Test	Mid-Test	Post-Test	P-Post-Test
Affective	Arlington Juniors N=9	20	3	12	2
Content		44	39	28	2
Effect		4	20	28	35
Element		32	29	28	41
Relation		0	9	4	20
Affective	Arlington Seniors N=7	18	0	0	0
Content		27	41	54	10
Effect		6	23	6	24
Element		49	21	30	43
Relation		0	15	9	23
Affective	Newton Soph N=12 I	0	0	0	
Content		100	100	44	
Effect		0	0	24	
Element		0	0	20	
Relation		0	0	12	
Affective	Newton Soph N=12 II	2	0	0	
Content		95	95	44	
Effect		0	2	20	
Element		3	3	23	
Relation		0	0	13	

(Figure 5)

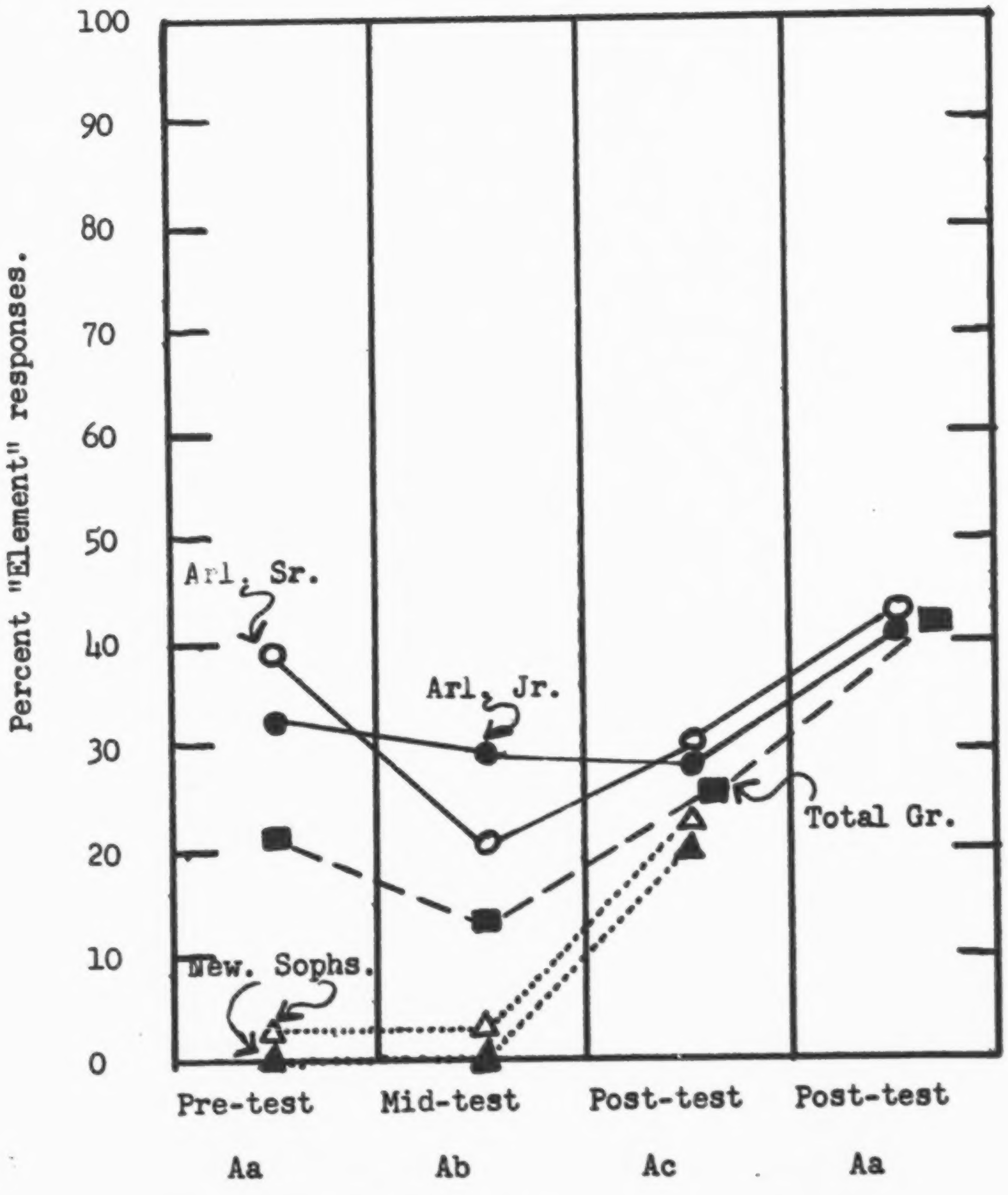


Figure 5. Percent "Element" responses on each of the test-poems.

(Figure 6)

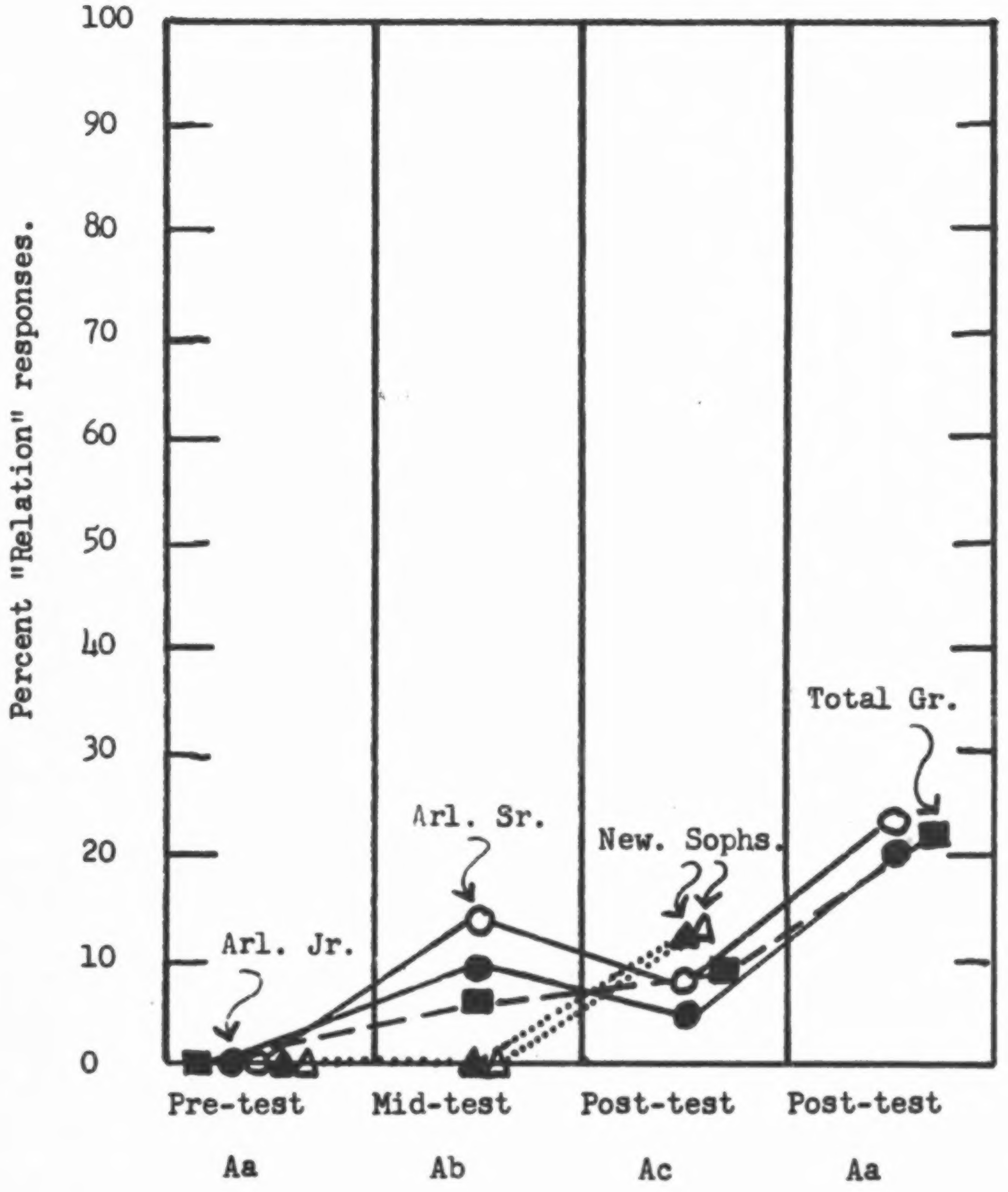


Figure 6. Percent "Relation" responses on each of the test-poems.

(Figure 7)

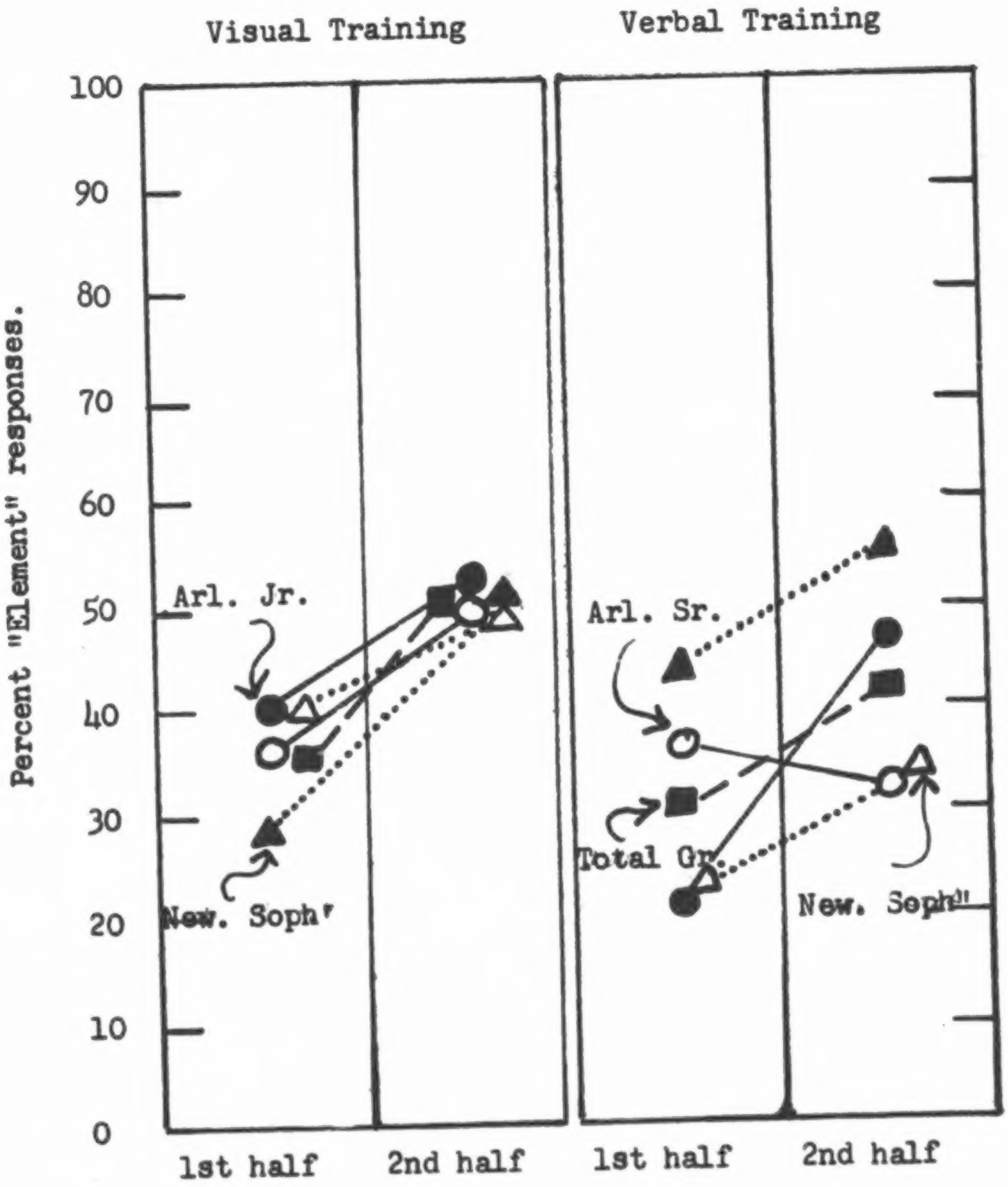


Figure 7. Percent "Element" responses on each half of the Visual & Verbal training.

(Figure 8)

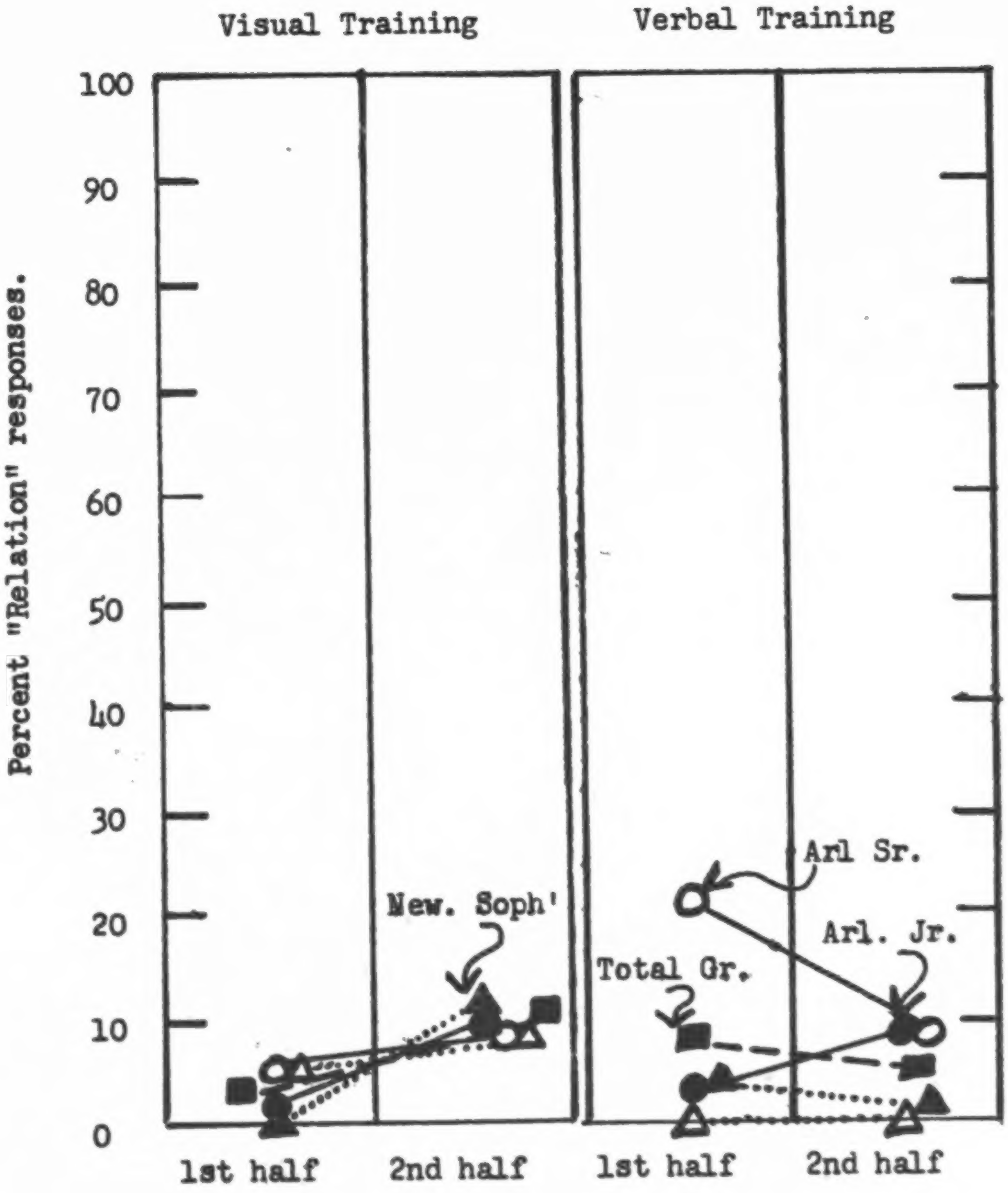


Figure 8. Percent "Relation" responses on each half of the Visual & Verbal training.

beyond the actual project data to the classroom experience, the older students seem to need either a shorter period of training with fewer concrete exposures of verbal and visual materials, or a higher level of material complexity. The somewhat inconsistent performance of Arlington seniors may be explained partially by their apparent ability to catch the essential ideas so early that the teacher branched off into consideration of other forms of literature in which structual elements and their organization were more subtle or unconventional than in the training material.

When it came to code the classroom verbal data for the latter part of the senior group training series, many of the comments were not explicit enough to be categorized as **element** or **relation** responses. Most of these responses were therefore classified as **content**.

In addition to the more formally obtained data, the English teacher gave her subjective impressions of how the training affected the various classes. It is worth quoting excerpts from her final report for a more dynamic description of what went on in class.

> **Arlington Juniors**
>
> This class was divided in its attitude toward the project. Initially, about half (3) enjoyed it and worked hard at trying to find information in the pictures; the other half continually complained about the idea of doing this in an English class, or tried to undermine the choice of pictures by suggesting others. Eventually, however, even the carpers were attracted to the task of finding the structure, and comparing the two pictures each time. They enjoyed the modern paintings more, and had very interesting and lively discussions of these.
>
> The class enjoyed the poetry; they seemed to feel on more familiar ground with it, and became quickly interested in the problem of contrasting the pairs of poems. They had quite a lot to say, but were not able to always relate their comments about form to their function in the poems as a whole. At the end of the series, one student brought in a favorite poem of hers which the rest of the class found very bad. The class discussed what details might have been changed to make it a better poem, and in effect, suggested what the "other" poem of a pair with this one might be. One student suggested that the class write its own alternatives, and they did, producing very successful stylistic opposites to the given poem. Next year, this type of exercise – the students actually writing the opposite will be used more systematically, and with prose as well as poetry.
>
> **Arlington Seniors**
>
> The seniors accepted the project with only a normal question as to what it was for, and reached a more complicated level of generalization more quickly than did the other classes. The work with poems stimulated several lively related discussions about the nature of poetry and verse, and the possible effects of regular and irregular verse on the reader's perception of "time" and "involvement" in a poem.

Whereas the junior class made individually good comments but did not often remember what their classmates had said – did not synthesize the material discussed as they listened, the seniors did remember issues discussed on previous days and tended to try to pull concepts together in a more orderly manner. They moved from the formal set of pairs to a series of individual poems, commenting very clearly and perceptively on the relation of form to meaning. They did the same sort of exercise – describing an effect and analyzing how it is created through specific details – with a novel; everyone in the class handled this exercise with much more attention to detail and to their own reactions to details than they had been able to use previous to the series of pictures and poems.

From the observations in all three classes, it seems clear that comparison is a very productive academic tool for the student, that he learns much from the study of two carefully paired works without the interference of the teacher. Although it is not ultimately clear from the testing, it seems from the increased sophistication of the discussions and the students increased attention to "effects" whether visual or audial, that the perceptual experience of learning to "see" in paintings **does** help the student to "see" structure in poems, and in prose.

Theme Reading

The theme reading project was designed to encourage wide reading, and to help the student think in a formal way about books he chooses himself. A short essay comparing several books he has read, a conference on each book as he finishes it, and an essay comparing several books help him to develop the skills of finding patterns and themes, and asking his own questions about books. The specific aims of the theme reading program were 1) to give the student experience in task persistence by requiring a set in cognitive direction over an extended period of time, 2) to develop cognitive flexibility by having students practice posing questions which would lead them to look at people, objects and events from many points of view.

Because there was not enough time to evaluate systematically the actual written reports of the students based on their theme reading for the present report, a representative sample of the teacher's impressions of how individual students reacted to theme reading is given.

– M continues to be friendly, but nonchalant about his work. Though he reads a great deal, he does not assume responsibility himself for finding and reading books which deal with his reading project theme. He tries to fit in books he has read which are irrelevant: he has to ask me always if a book fits in; and in the first draft of each book report he avoids dealing with the main theme of the book explicitly. He hands it in saying he knows he hasn't done it right – but waits for me to tell him before he will revise it and attempt to correct it.

- BB has been in class every day and on time every day. He has been interested in the class, and a participating member of all the discussions and activities. He has also been reading and getting in his reading reports, once he got started – but he has been more interested in handing in the piece of paper than really thinking through what the assignment was for the content of it. In a rush to get in some back work at the end of the term, BB handed in several papers, hastily written, which did not fulfill the terms of the assignment as we had discussed it at all. I asked him why he hadn't thought it out more, and he said he thought I just wanted the papers in and he had a lot of them to do so he wrote them quickly.

- When LL began coming more regularly, the last three weeks, she worked very well, but handed in her reading reports at the last minute, and so did not have time to discuss them with me and revise them. These papers were confused, and not up to her previous work, probably because she was rushed in getting them in, and did not leave herself time to talk with me about the assignments thoroughly.

Without being able to justify it with solid evidence, it seems to be the case that the Arlington students require a good deal of support in a learning activity which may appear to them to make excessive demands on their ability to select and organize learning experiences on their own initiative. While it is not desirable to give these students continuously a high degree of intellectual support, it is evident that in a more open learning situation the teacher must be initially a close collaborator in the venture. The intellectual weaning, if it is to be successful, must be accomplished gradually.

THE HISTORY CURRICULUM UNITS: CONTENT, PROCEDURES, AND EVALUATION

Materials and instructional procedures were developed in terms of units to be taught within a Modern European History course, although a number of them were turned out also in a senior history course. However, the units were thought of as being transposable to other courses which should deal with the same topics, issues, or concepts. In what follows the various units will be described and illustrated. Evaluations will also be given, but in the present stage of curriculum development, the importance of the evaluation lies more in the procedure worked out than on the actual findings. In a sense, the units themselves provide models of approach to a wide range of historical material. The emphasis is on the process of learning history, not the specific content itself. It is believed that most of the content of typical courses in History could be the vehicles to carry the perceptual and conceptual training provided by the project units.

Before proceeding to the units themselves, a brief resume of the types of intellectual functioning required in the study of history will provide a perspective for the general approach to specific unit construction.

At the most elementary level, a study of history is primarily a matter of retention and recall of a number of facts, of identification of fairly concrete objects, that is, of persons and occurrences. These concrete objects are well-defined either by the teacher or the textbook. What constitutes satisfactory performance or performance to be rewarded is therefore well-defined and readily observable to the student. The student can succeed if he memorizes a number of correct or "right" answers. To get to the next level on the continuum the student must acquire the ability to read or review a large number of facts and determine for himself which are most important or central in the context of the subject which he is studying. In other words, he must decide which out of a number of facts he is to memorize or retain.

At the next more advanced level, the student is required to exert more mental activity and initiative. In addition to simple retention and recall of concrete facts, he is asked to reflect over the facts he has acquired, to structure them, to place them in a context both of time and of parallel or dissimilar occurrences, to see meaningful relationships among various groups of facts. The student is thus asked to reflect and to speculate rather than to memorize, to see more abstract rather than concrete identifications or relationships. The learning situation is thus a more ambiguous one, and what constitutes satisfactory performance is neither so well-defined nor so readily observable to the student.

At the end of the continuum the student must display a creative ability to view or manipulate historical facts in a new or original way.

With this rationale in mind, the units to be designed were built, tried out, and evaluated. For the sake of a clear organization, the units will be presented in line with topics covered in a course in Modern European History. Figure 9 presents this sequence of topics. While it is not easy to separate the processes of perception and conceptualization, the distinction is made throughout the following discussion because of the relative emphases given them in the various units. While the project was concerned with evaluating and developing such conceptual skills as ability to look for abstract relationships, to develop new concepts and expand old ones, to analyze and compare verbal and visual materials, and to draw inferences, it was also concerned with developing students' ability to look closely at perceptual material and to ask intelligent and sometimes far-ranging questions of it. The aim was to waken in the student the realization that a wealth of information and insights are available to him if he can learn to look.

A number of exercises were developed expressly to train selected cognitive skills through the use of both verbal and visual material. These exercises were given at various points during the course of study, functioning either as pre-measures or post-measures. The verbal exercises will be described first along with general group results.

1. History Word Sorting

A group of 60 historical words, including historical persons, events, treaties and movements were given to students of both the Modern European History class and the senior history class to sort into groups historically meaningful to them at the beginning of the year and again in the spring. The task was open-ended in that there was no set of substantively "correct" answers against which the student's performance would be evaluated. Apart from data revealed about the students' general background knowledge of history and their tendencies toward impulsivity or reflectivity, as indicated by times to complete their sortings, the measure gave information about the broadness or narrowness of the students' general conceptual approach, and the concreteness or abstractness of their conceptual groupings.

(Figure 9)

1966 – 1967
MODERN EUROPEAN HISTORY
TOPICAL OUTLINE

I. Eighteenth Century Sept. 13 – Oct. 18

A. The Enlightenment

B. The French Revolution

We worked on the ideas and ideals of these two topics: the effect of the Enlightenment on France; the effect of the French Revolution on France; and the effect on the rest of Europe. Development of rationalism, nationalism, upset of the existing order, changed relation between the individual and the society, development of revolutionary ideals (liberty, equality, fraternity).

II. Nineteenth Century Oct. 19 – Oct. 31

A. Napoleon and the Napoleonic Era
    Rise to power
    Domestic accomplishments
    Foreign involvement
    Downfall
    Legacy

1. To investigate his role as successor to the French Revolution – did he continue the revolutionary ideals, or ignore them; did he aid democracy?

2. To investigate his effect on Europe, on the development of nationalism in other nations; on the power structure of Europe; on the transporting of French revolutionary ideals abroad.

3. Possibilities for work on the "hero" in history: great men changing course of history.

B. Liberalism vs. Reaction, 1815-1850 Nov. 1 – Nov. 11
    Congress of Vienna – Metternich System
    Revolutions of 1830
    Revolutions of 1848

1. To see the period as an attempt to restore the traditional power structure of Europe.

2. To see the period as an unsuccessful attempt to turn the clock back and deny nationalism, liberalism, and revolutionary ideals.

C. Economic Revolutions — Nov. 14 – Dec. 5

The Industrial Revolution – origins, developments, economic and social consequences of Industrialization
Responses to Industrialization – liberalism, socialism, Marxiam, anarchism

1. To show the intellectual responses to the great social, economic, and political changes which occurred in Europe as a result of scientific discoveries.

2. To show the economic, political, and social implications of these ideas.

D. Europe – 1850-1900 Major Trends

Britain, France — Dec. 6 – 19
Unification of Italy, Germany — Jan. 3 – 20
Russia, Austro-Hungarian Empire

1. To trace the development of democracy, parliamentary government, and liberalism in Western Europe.

2. To show the triumph of nationalism in the unifications of Italy and Germany. And to discover the effect of same on the power structure of Europe.

3. To see the continuation of the autocratic, undemocratic strain in Europe.

E. Intellectual ferment – 1850-1900 — Jan. 23 – Feb. 7

Science — Major individuals:
Philosophy — Darwin, Nietzche,
The Arts — Freud, Wagner, Impressionists

1. To show how the 19th century thinkers and intellectuals qualified, adapted, and rejected the basic Enlightenment precepts concerning reason, natural law, and progress.

2. To show the impact of the intellectual ferment on the thinking and actions of several generations, i.e., role of ideas in shaping events, and in shaping the political, social, and economic responses to events.

F. Imperalism — Feb. 8 – Feb. 17

Nature of and causes
Powers involved and areas included
Justification of imperalism
Results

1. To show imperialism as a political and economic rivalry among the European nations.

2. To show imperialism as an extension of that power rivalry, and as a contributing factor to the power rivalry.

3. To show the relation of imperialism to nationalism of the European countries.

4. To show imperialism as a cause of World War I.

III. Twentieth Century

A. World War I — Feb. 27 – Mar. 8

Background and Causes
Developments
Outcomes

1. To see the war as a result of many factors including nationalism, imperialism, power politics.

2. To see the effect of the European nations of the War.

B. Russian Revolution

Background
Events
Significance

1. To see the putting into practice of revolutionary socialism.

2. To see the advent of modern totalitarianism and rejection of democratic and liberal ideas.

3. To show the tremendous importance of the revolution in the subsequent history of Europe.

4. To investigate again the theme of "hero" or great man in history.

C. Failure of the Peace – the Interwar Years

Weakness of the democracies
Rise of totalitarianism – the Dictators
Appeasement and the Path to War

1. To show how the peace settlement ending WW I carried the seeds of WW II.

2. To show the role of economic conditions, social factors, and ideas in the dictators' accession to power.

3. To show the force of nationalism in the policies of Italy, Germany, Japan in the '30's.

4. To show the shifts in the power structure in Europe.

D. World War II
    Causes
    Developments
    Major international conferences
    Outcome

1. To show that post-war world is in large part the result of the War's outcome.

2. To show increasing importance of Russia during the War.

3. To show the increasing importance of United States during the War.

4. To show War as result of aggressive and imperialistic policies of the dictators.

E. Post-War World – 1945-1966
    Cold War
    Emerging Nations
    UN
    System of Alliances

1. What are the major problems of today

2. What are the major power alignments

3. Where does man stand – what are the principal forces operating in the sphere of human endeavor.

TABLE 12

Results of Word Sorting Exercise

Fall 1966

Subject	No. Groups	Time (Minutes)	Miscellaneous Items
B	8	24	30
D	6	28	17
G	7	11	20
M	7	22	16
A	7	35	26
CC	9	45	17
C	7	29	7
K	11	26	18
DD	none	90	6
EE	7	41	26
N	12	62	6
W	11	50	14
P	5	34	44

Results of the first sorting in the fall are presented in Table 12. It may be observed that the number of groups into which students categorized the words ranged from five to twelve with one student failing to group the terms at all. Casting additional light on the effort which the students put forth in coping with the task were the number of terms they left in their miscellaneous piles. One student put 44 terms in that undifferentiated class, while two students had only 6 unassigned to some group. The measure clearly indicates wide individual differences in broadness or narrowness of equivalence ranges which these students have.

Differences also were found in levels of concreteness or abstractness. Five students formed their groups on the basis of historical movements and influences, indicating a good fund of information and the ability to draw upon it and organize it. At the other extreme were two students who had groups based on gross similarities of words; e.g., French Revolution, Industrial Revolution, Glorious Revolution, a very concrete, perceptual sorting.

A poor performance on this task could be indicative of many things: simple ignorance of the terms to be sorted, temporary inhibition of good intellectual functioning at the time of task, or a genuine lack of conceptual ability. On the other hand, a high level performance, abstract and well differentiated, could indicate that the student has at hand information and cognitive skills to handle such a categorizing task. In addition, he is demonstrating the capacity to keep his overall conceptual goals in mind throughout the task, despite the many possible tangents suggested by each individual item.

Six students in the Modern European History class and four from the senior history class completed the History Word sorting task when it was repeated in the spring. Students again were asked to place 60 history terms and names into whatever and as many groups as seemed appropriate to them.

Three of the students in Modern European History had completed the task at the beginning of the year, making a small scale comparison possible. Below are comparisons of number of groups, total sorting times, number of terms placed in a miscellaneous pile and number of terms unknown to each student.

TABLE 13

Comparison of Fall and Spring Word Sorting Exercise Results

	N of Groups		Time		N Mis. Groups		Don't Know	
Student	Fall	Spring	Fall (Min.)	Spring (Min.)	Fall	Spring	Fall	Spring
K	11	12	26	35	18	18	--	0
M	7	13	22	28	16	7	5	1
N	14	13	62	50	6	1	6	0

For two of the three students the number of groupings remained roughly the same, while a third student moved in the direction of narrower equivalence ranges. The three students retained their relative positions in terms of time taken to sort the terms, suggesting that this may be a comparatively stable indicator of cognitive style. For two students there was a marked decrease of terms placed in a miscellaneous grouping, indicating a greater perception of possible relationships among the terms. In terms of the amount of history learned during the year, it is of interest that the students recognized all but one of the terms the second time.

Below is a table of results of the Modern European History group and the senior history group combined for the spring exercise.

TABLE 14
Word Sorting Exercise Results – Two History Groups

Modern European History

Student	No. Groups	(Min.) Time	Miscellaneous	Don't Know
JJ	13	30	8	10
HH	15	26	5	7
K	12	35	18	0
M	13	28	7	1
N	13	50	1	0
O	10	17	0	9
Senior History – Contemporary Issues				
Q	8	35	0	0
KK	8	30	6	10
W	11	34	4	8
P	20	31	9	4

It will be noted that the number of groups ranges from 8 to 20, with the Modern European History group having somewhat more groups. This may reflect their greater familiarity with a broader range of terms, since the senior class is concerned primarily with contemporary problems. Except for the extreme high time of 50 minutes and the low time of 17 minutes, it took most of the subjects about half an hour to complete the task. This uniformity of time is in striking contrast to the students sorting in the fall. There the time range had been from 11 minutes to 90 minutes. This change may come about from the students' greater familiarity and ease with tasks which are not conventionally academic.

In comparison with the fall performance, where students placed an average of 18 terms in miscellaneous piles, students in the spring placed only an average of 6 terms in such groups. with two of them not using the category at all and another only classifying one word this way. As indicated earlier, this would suggest the students were more aware of relationships and less inclined to handle the task at such a superficial level.

A qualitative examination of the performance supports the view that the students were less inclined to a superficial, highly concrete approach to the task in the spring than the fall students had been. In the first sorting there were a number of groupings which appeared to be perceptually determined, such as all terms ending in "ism", or all revolutions as a group regardless of the major differences between the French Revolution and the Industrial Revolution, for example. With the Modern European History group none of these classifications were used in the spring, though one of new new seniors did use "isms."

When the three students who had sorted in the fall were compared with themselves as they sorted in the spring, there appeared to be somewhat more conciseness and organization in the work of two of them, though the changes were not clearcut.

2. Abstract Terms

The discussion of history is loaded with terms seemingly familiar to the student and it usually does not occur to him that he does not know what they mean, nor does it sometimes occur to the teacher that she and the student may be operating from very different frames of reference when they use terms such as socialism, capitalism, nationalism, or imperialism,

With these considerations in mind, three exercises have been built around pairs of abstract words: **Socialism – Capitalism**, **Nationalism – Imperialism**, and **Democracy – Totalitarianism.** The exercises have been designed both to yield information about student concepts of the words and to serve as evaluative and training devices for several important cognitive skills. Built into each list of words (See Figure 10) to be classified were a number of terms which were not dependent on the student's substantive knowledge for a meaningful response. This allowed the student to respond either at a superficial level by rather arbitrarily assigning them to a specific category, or he could treat them with more awareness of their potential depth and complexity by placing them in a **both, it depends,** or **does not apply category.**

The first exercise on **Socialism – Capitalism** was given early in the year. A few days after the students completed the exercise, the results were used as a basis for a discussion on the nature of concepts. The students were shown that there were substantial agreements among themselves, the teacher and the headmaster (whose field is history and who volunteered to do the exercise), giving a core of consensus to the words. But they were also shown that even specialists in the field, the teacher and headmaster, differed on some of the connotative aspects of the terms. In relation to the more complex terms – 12 in this exercise – the four students who completed the exercise placed a total of 3 to 11 of these words in the **both** or **does not apply** categories. This indicates a considerable range in student ability to see possible complexities.

The second set of terms, **Nationalism – Imperialism,** were given to the students at the close of the unit on imperialism. Five students participated. This time students were asked to give reasons if they felt that one of the 21 terms used applied either to both concepts or depended on special considerations. One student, a comparative newcomer to the class gave no reasons, while another student gave 20 reasons. The reasons proved a valuable addition to the method in giving information about individual students' levels of performance. One student concretized the task by thinking in terms of the colonial country ruled. A second student did not think in cause and effect terms, but overgeneralized broadly and loosely. The other two students in the group were able to bring to bear what they had learned from the units on unification of a national and imperialism and to give cause and effect reasons. As with the earlier class discussion on socialism and capitalism, the class was able to build on their responses to the exercise to profitably explore their concepts.

The third exercise in abstract terms was given later in the year in connection with a study of Nazi Germany. Here 6 of the 12 terms were considered to be more complex or connotative than the others.

(Figure 10)

ABSTRACT WORDS EXERCISES

Socialism – Capitalism

*Respect for the Individual
*Governmental Regulation
*Beneficial
Inevitable
Depression
*Social Welfare
Class Struggle
*Liberty
Suffrage
Majority Rule
Capital
Proletariat
Scientific
Imperialism
Labor Unions
*Wealth
*Exploitation
Economic Opportunity
*Oppressive
Social Mobility
Christian
Democratic
*Liberal
Nationalization of Industry
*Conservative
Private Ownership
Middle Class
Administrative Centralization
Social Darwinism
Nationalism
Monopoly
Just Price
Law of Supply and Demand
*Violence
*Poverty

Nationalism
Imperialism

*Beneficial
*Liberty
Capitalism
*Wealth
*Exploitation
*Economic Opportunity
*Oppressive
Missionary
Social Darwinism
New Markets
Napoleon
*Patriotic
Profitable
*Common Enemy
*Historical Tradition
Industrial Revolution
Sea Power
Power Politics
*Revolutionary
*Glory
*War

Democracy
Totalitarianism
Communism

Elections
Socialism
*Liberty
Terror
*Oppression
*Beneficial
*Patriotic
Minority Rule
Revolutionary
Nationalization of Industry
Respect for the Individual
*Propaganda

**Connotative or Complex Terms selected to measure student's ability to identify the requirement of an explicit point of view for a given interpretation.*

In striking contrast to the first of the three word exercises, the students were completely receptive to the task, raised no questions about the psychological nature of the task, and in fact worked cooperatively and with high concentration. They seemed more at ease, perhaps because of their familiarity with this type of exercise. Two students asked questions pertaining to the way a particular description was to be used, e.g., "Was the term "elections" meant in general or specifically". In each case they were told that **"it depends"** column was there for them to define how a term was to be used. The students said that the exercise was interesting. It is also notable that all students worked more quickly than in the first test.

The interest in these exercises is not in the terms per se, but in using them as vehicles to teach the students about the process of forming concepts and the nature of abstract concepts. By forcing them to come to a decision about a term and to back it up with a reason, they are being required to actively engage in the process of at least expanding, if not forming, a concept. In class discussion they can bring the concept out for social evaluation, in somethings akin to Piaget's description of concept development in the school age child.

3. Questioning Techniques – Preparation for a Mid-Term Exam

As a part of their preparation for the mid-term examination, students were asked to raise two questions which they considered significant about the period so far studied. From the viewpoint of the teacher the method gave valuable information about the kinds of information and insights the students were getting from the course. For the research project, it gave another indication of the students' level of cognitive functioning. Questions were rated on a three point scale: 0 for questions which were specific, factually oriented, and with events seen as rather discrete entities; 1 point for questions concerned with broad relationships, and 2 points for questions which indicated an ability on the part of the student to go beyond both factual information and an understanding of their relationships to highly abstract speculation. Scores ranged from 4 full credit for questions such as, "How do economic factors influence historical developments?" to 0 for "List the factors that led to unifications of Italy?" a straight recall question.

4. Speculation Training Exercise – The Italian Meal

A major concern of the project was the question of possible transfer of a cognitive skill from one task to another at a later time. The year before the history group designed a unit on Italian unification using as a part of its materials recipes from different regions of Italy. A luncheon meal of dishes using recipes from northern and southern Italy encouraged students to envision life in the two regions as they ate the food. (See Figure 11 for recipes). The purposes of this training device were: 1) to give concrete meaning to the abstract terms being studied; 2) to encourage flexibility in study through a use of a greater variety of materials; 3) to encourage speculation by showing how a material seemingly unconnected with history could be used as an analytic tool, and 4) as a motivational technique.

That it achieved its fourth objective was adequately borne out by the fact that all students attended class that day, an unusual occurrence for these students. They volunteered to help with the preparations and were eager participants in the discussion during the meal. In addition, and perhaps most significantly, one of the students thanked the teacher the next day for the lunch on behalf of the class. For these students pleasant experiences often seem in contrast to this one to have impact only as they are happening, with little positive anticipation beforehand and little happy remembrance afterwards.

To evaluate the success of the other three objectives and to test for transfer of skills to a similar but unrelated task, students took part in an instructional interview built around these Chinese recipes. (See Figure 11). The interview was given to each student individually during the unit on Imperialism, where they were coming in contact with the Orient in their studies, about a month after the Italian unification unit. The interviews were designed to study the students' ability to use the recipes an analytic tools, to generalize from clues provided in the material, and to speculate upon them, all cognitive skills which had been worked on in the Italian lesson.

Five students took part in the instructional interviews. The directions were structured to give increasing support and hints to the student if he needed them. The students were first asked to analyze the recipes in the way they had the Italian recipes. The interviews were ended with an invitation to speculate: "To end, can you think of any reasons or explanations for these people's poverty, why they would have a diet like this as their standard diet?"

The number of observations made by the standard on the recipes ranged from 25 to five, only three of the students noting the significance of the number served by the recipe. Three of the students responsed readily and without need of any supporting questions. The other two students required prompting from the interviewer, one because he seemed uncomfortable with the task and the other because of a marked tendency to perseverate. Answers to the speculation questions fell roughly into three categories:

1. Substantive answers specifically on China which they happened to know.
2. Extracting possible causes for poverty from other history lessons or from general knowledge.
3. More imaginative or perceptively arrived at reasons.

The speculation question was handled with richness and imagination by one student who put himself quite graphically in the position of a Chinese peasant. At the other extreme was the student who said that it was just traditional to be poor. As a method for revealing students' ways of exploring problems and drawing inferences, this type of instructional interview seems very useful. The transfer required was not a very broad one, but two of the students were able to use it as a springboard for much broader speculation and questioning.

Visual Tasks

As in the previous year's course, slides, paintings and exhibits were used throughout the various history units. The teacher then had reported the many student comments to the effect that they prefer this type of material to the usual textbook or verbal exercises described in the preceding section. In commenting on student response to one of the abstract terms exercises used this year, the teacher remarked that this exercise seemed to confirm her observation that students felt more threatened by words than by pictures and consequently function less effectively in trying to sort out and think through meanings expressed in words.

To review briefly, visual materials were used throughout the year in a variety of ways and with a number of goals in mind: (1) to stimulate interest through the introduction of visual as well as written material, (2) to give concrete, specific meaning to abstract historical terms or events, (3) as perceptual training tools in clue search exercises, (4) as an evaluative tool in assessing the student's level of intellectual functioning and for the identification of any special problems he might be having in perceiving, organizing, and carrying out assigned intellectual tasks, (5) as both an evaluative and creativity training tool in that slides can provide a more "open-ended" material than written materials.

Figure 11

RECIPES

ITALIAN

Spaghetti alla Siciliana (Sicily)

1 lb. spaghetti
½ c. olive oil
½ eggplant
6 large tomatoes
Basil, garlic
1 tablespoon capers
4 anchovy filets
1 doz. black olives
2 green peppers

Ragu Bolognese (Meat Sauce used in Lasagne al Forna Bolognese) (Bologna, Romagna)

½ c. bacon
½ c. ham
1 onion
1 carrot
1 stalk celery
¾ lb. beef
¼ lb. veal
¼ lb. pork
½ c. cream
¾ c. stock
½ c. white wine
2 tbls. tomato paste
cloves, nutmeg
¼ lb. mushrooms
2 chicken livers
Parmeasan cheese

Saltimbocca alla Romana (Rome)

2 veal cutlets per person
sage
slices of ham
butter
white wine
mushrooms

Banane alla Fiamma 'L Gaval 'd Brons

butter
½ c. sugar
4 strips lemon peel
16 dates
5 bananas
½ c. rum

CHINESE

Fried Rice, Cantonese Style

(Serves 3-5 people)

2 or 3 eggs
2 tsp. salt
2 tbs. onion
5 tbs. cooking oil
4 cups cooked rice
1 tsp. Chinese brown gravy syrup

Moo Shi Pork

(Serves 2-3 people)

½ cup lean pork
¼ cup dried Chinese wood ears (black fungus)
½ cup dried golden needles (tiger lily)
4 eggs
2 tbs. soy sauce
3 tbs. oil
1 slice ginger root
1 scallion
1 tsp. salt
Mushrooms, bamboo shoots, Chinese cabbage

Peking Duck

(Serves about 4 people)

1 large duck, the larger the better (about 10 lbs.)
½ tsp. brown gravy syrup
1 tbs. corn syrup

Serve with two sauces and Chinese pancakes made with:

1¾ cup flour
¾ cup boiling water
1 tsp. salt

1. Napoleon Slide Exercise

A large and varied number of slides were shown in conjunction with a unit on the French Revolution and Napoleon. These included paintings of the events in the life of Napoleon, caricature, romanticized paintings, photographs, etc. At the end of the unit, the slide test administered the preceding year was repeated with the same slide and instructions.

Five sets of two slides were shown, preceded by one sample set of two slides. The sample was discussed by the class. The instructions in each case were: What is the relationship between the two slides. This relationship was to be written down by the student. It should be noted that the teacher explicitly identified each slide shown. (This is Napoleon as first consul," etc.). In the last set of slides the students were asked to note as many relationship as possible between the two slides.

The sets of slides are shown in Figure 12.

Sample Set –

1. Portrait of Louis XIV
2. Painting of Fall of Bastille

Set I (Pictured)

1. Caricature of Napoleon's soldiers taking the booty of war.
2. Photograph of Napoleon's throne room.

Set II (Pictured)

1. Romanticized painting of Napoleon as a general on horseback.
2. Goya's caricature of the horrors of war.

Set III (Pictured)

1. Romanticized portrait of Napoleon as First Consul.
2. Caricature of Napoleon and Josephine at a table gorging themselves on the plunder of Europe.

Set IV (Pictured)

1. Painting of Napoleon presenting his infant son to a Paris crowd.
2. Cartoon of Napoleon being forced to sign abdication papers.

Set V (Pictured)

1. Painting of Napoleon as First consul. (See above)
2. Portrait of Louis XIV (Pictured)

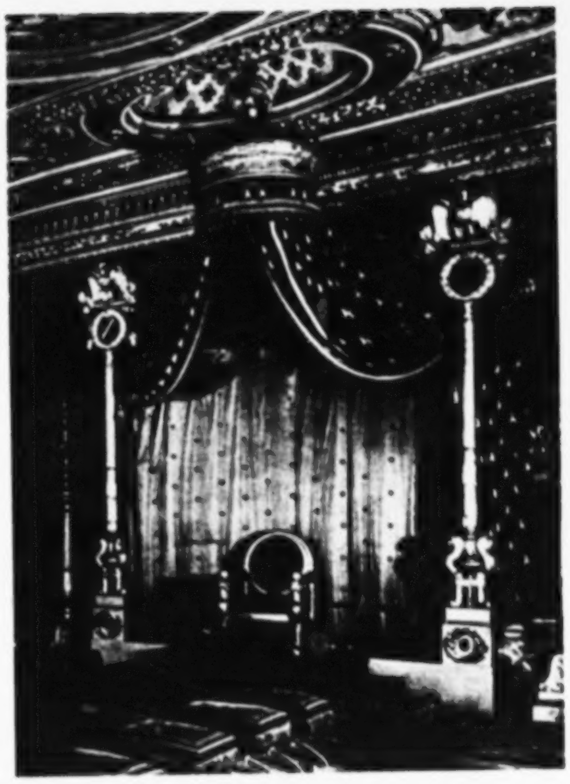
It was stated at the start that there were no "right answers" – a variety of relationships existed and different students might note different relationships. The teacher also stated that it was possible one wouldn't immediately see a relationship between the two, but should think about it for a while.

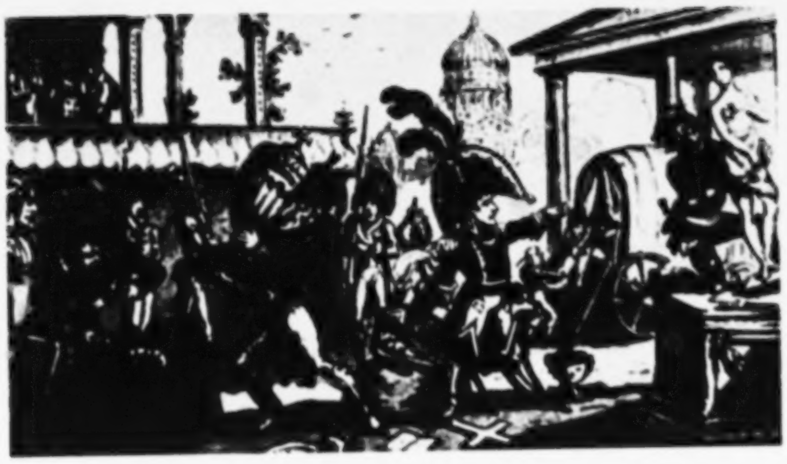
It again proved to be a useful exercise in that students participate willingly, its use is not limited by the size of the class, and it yields significant cognitive data, including a measure of the concreteness of abstractness of the student's conceptual functioning. In addition, since it is a sequential task, an analysis of the performance as the exercise proceeds suggests

NAPOLEON SLIDE EXERCISE

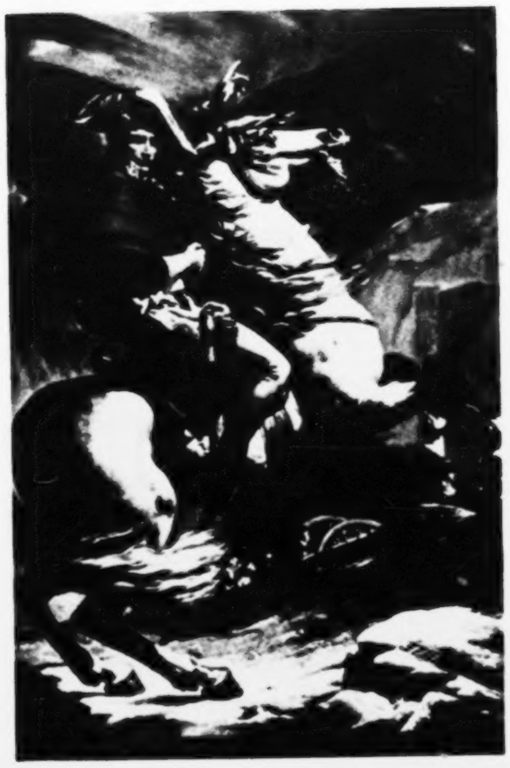
(Figure 12)

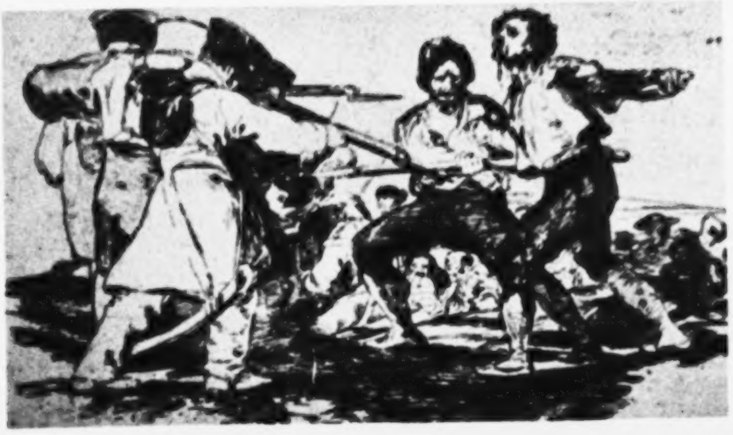
Set I



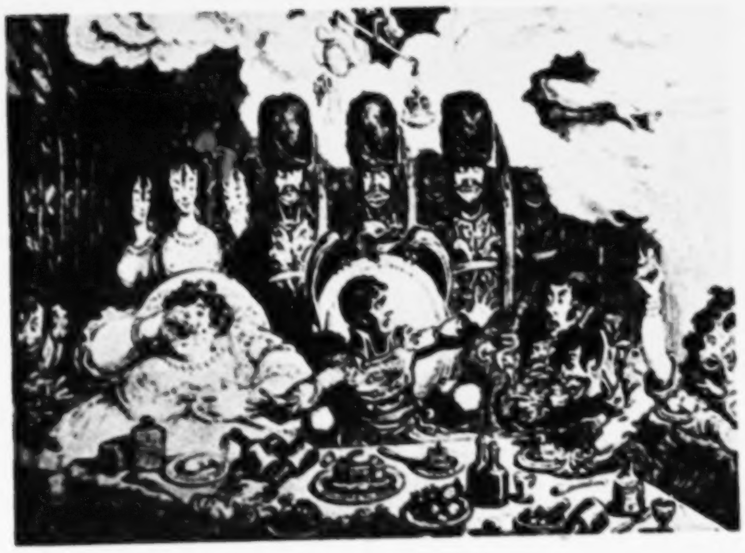


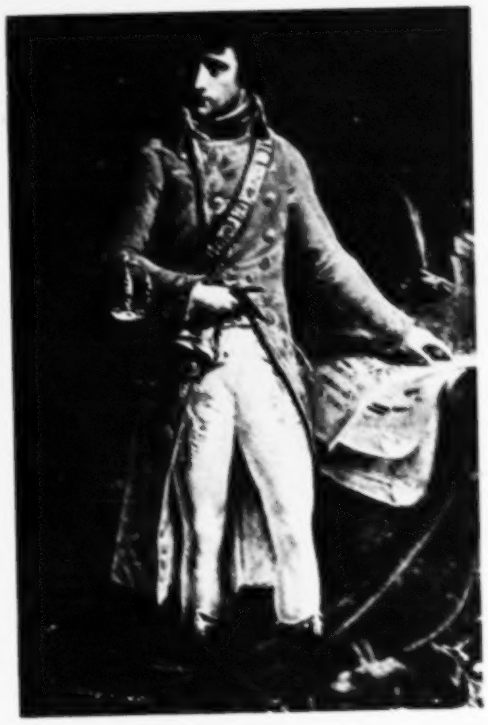
Set II



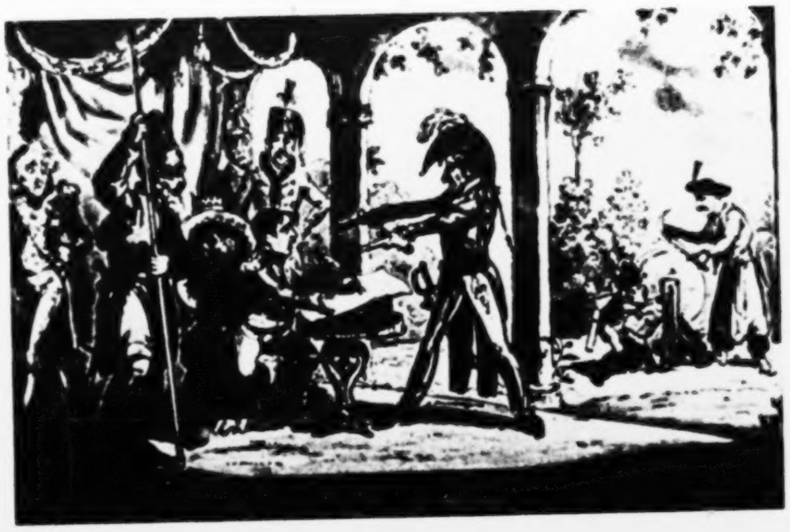


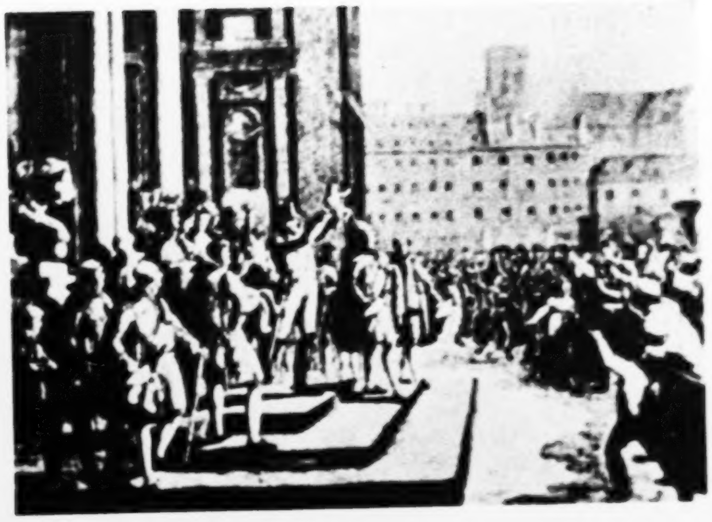
Set III



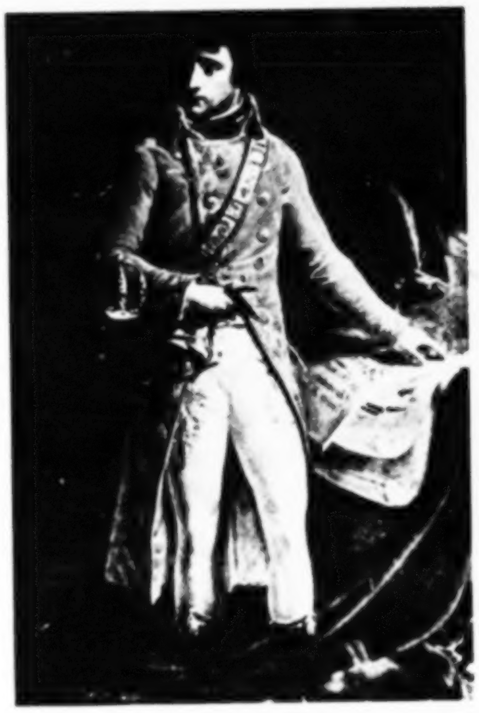


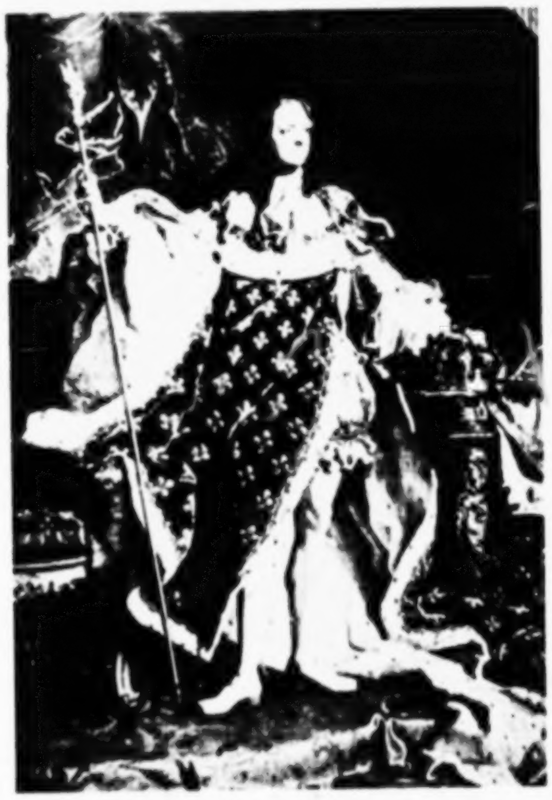
Set IV





Set V





points of blocking and tendencies either to function at an increasingly more integreated level as pressures of the task continue or to begin to disintegrate toward a more concrete performance.

Responses were scored on a three point scale, after the system used on the WAIS and WISC, O for a very concrete response, 1 for a moderately concrete response and 2 for a good abstract relationship. Table 15 is presented primarily to show how students' responses can be evaluated by this scale rather than to report out specific findings.

2. Industrial Revolution Unit

In conjunction with this unit visual material was used in a variety of ways. First, slides were shown to accompany a series of class lectures in order to give some visual and concrete meaning to the rather abstract social, economic, and political changes being described verbally in the text materials. Secondly, two slide exercises were prepared in which students were again asked as in the Napoleon unit to indicate possible relationships between members of sets of slides. One exercise was designed for classroom training, the other as an individual written evaluation procedure. A third use of visual material was in the form of an exercise involving five pictures portraying different stages of industrialization. Students were asked to tape record their responses to the pictures. Finally, slides were built into the section of the unit involving Hauptmann's play **The Weavers** which presents the plight of a group of German weavers as the Industrial Revolution catches up with them. The students were given five slides and told to pick out appropriate passages from the play as captions for them. In order to deal with this task, the students would have to select the most relevant clues in the slide and then match it with verbal passages from the play.

With regard to the slide exercises handled in classroom discussion and writing, it should be noted that they differed from the Napoleon slide exercise in that there was no clearly built-in structure, thus making it more difficult for a student to arrive at an overall organization. The student had first to identify the contents of the slide and represent it in some kind of larger framework before going on to discover more intricate and abstract relationships between the slides within the framework.

The first part of the written exercise consisted of a set of three slides; (1) a painting of several hundred year ago showing a large group of people in a home. One segment of the group is sharing the tasks of weaving and spinning; (2) Van Gogh's drawing of a solitary weaver; (3) a photograph of a gigantic weaving machine. Figure 13 presents the triad of slides. The second set of slides was made up of three depictions of children; (1) a poorly dressed child working in a factory; (2) an idealized painting of a boy in overalls and straw hat carrying a pail of berries in the country; (3) an impressionist painting of a small well dressed girl with a woman sitting at a table in a park cafe.

The first set was selected to show a time sequence in the increasing sophistication of machinery, the change from labor-intensive to machine production, and the change from a home manufacture economy and social order to a factory one. In contrast, the second set of pictures of children had no immediately obvious connection. Their relationship is seen to rest on the fact that they illustrate three completely different styles of life, although all three were existing at the same time.

Unless the student sought some organizational framework, he would go off on random tangents with each slide and would find it very difficult to discover meaningful and coherent relationships. Of the four students taking part in the exercise, only one was able to handle it at high level of proficiency on both sets of slides. A second student was able to note the

TABLE 15

Scores and Qualitative Responses to Napoleon Slide Exercise

Student	Score Pair	Sequence Score	
N	1	1	Sees immediate meanings and relationships of first three slide pairs, but slips into discrete description on the last two.
	2	1	
	3	1	
	4	1	
	5	0	
		4	
M	1	2	Uneven performance. Shows ability to recognize the abstraction involved, but ends up with greater concern for concrete aspects of the slides.
	2	2	
	3	1	
	4	2	
	5	1	
		6	
K	1	1	Approaches abstract level in that he sees slides as representing something else, but does not push beyond this level. Responds primarily to each picture as a separate entity, with relationship merely hinted at.
	2	2	
	3	1	
	4	1	
	5	1	
		6	
G	1	1	Is increasingly successful in perceiving an abstract relationship between the pairs of slides as the task progresses.
	2	2	
	3	1	
	4	2	
	5	2	
		8	
B	1	1	Rather concrete relationship between the slides, but attempts with some success to treat them on a more abstract level.
	2	1	
	3	2	
	4	2	
	5	1	
		7	

Examples of Response Levels

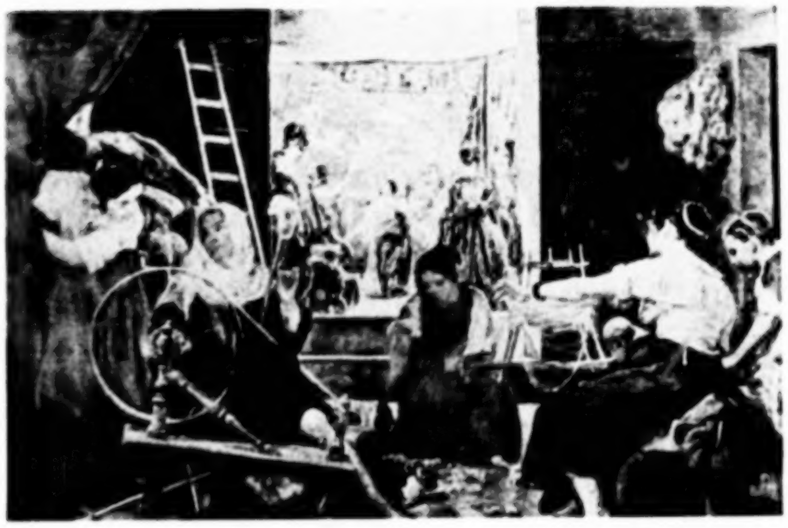
Score		
2 credits	Pair 4:	"His plan for having a line of her family ruling France is ruined."
1 credit	Pair 1:	"Two phases of Napoleon's life."
0 credit	Pair 5:	"Louis in pajamas; Napoleon in uniform."

INDUSTRIAL REVOLUTION SLIDE EXERCISE

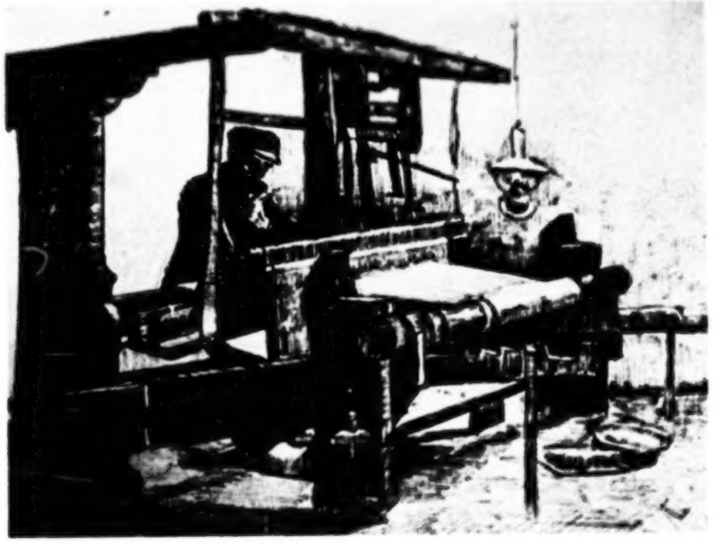
(Figure 13)

Part 1

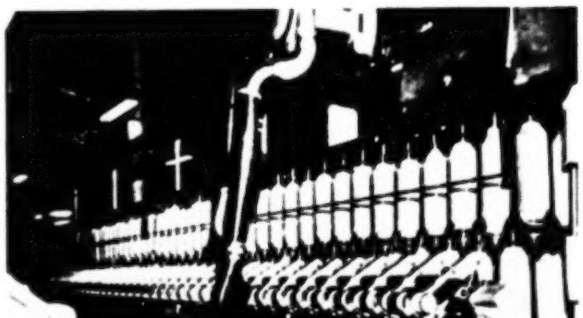
A.



B.



C.



sequential framework and two types of relationships in the first set of slides, but tended simply to identify the second, more demanding set of slides, seeming to be quite unaware of their potential relationship to the overall Industrial Revolution framework. The third student made a slight, but not very effective attempt to find an integrating relationship. The fourth student simply identified or commented on each separate slide, occasionally becoming swamped by irrelevant detail, a characteristic of his cognitive functioning noted frequently with both verbal and visual materials.

In the exercise involving five pictures portraying different stages of industrialization to which students were asked to tape record their responses. The instructions were unstructured, so that the students could go into as much or as little detail as they felt inclined to go into. Only three students took part in the exercise, but the differences in quality and amount of response was very marked. One student described each picture in some detail, jumping from detail to detail and speculating in rather a disconnected way about their possible significances for the Industrial Revolution. He seemed to be rather overwhelmed by the amount of detail to which he could respond and not quite able to impose a meaningful order on it.

In contrast the second student spoke mainly of the relationship among the five pictures, as showing "the gradual, or not so gradual progress of humanity . . . and . . . the building up and the air pollution and the factories and the destruction of the wide open spaces." The third student summarized the five pictures in a sentence and then commented on the quality of the drawings from a "free drawing" in the first picture to a "very precise drawing" in the final picture of the series.

In these three responses, then we have represented the extremes of the problems of clue searching with visual materials, from the student who was nearly overwhelmed by detail to the student who apparently saw almost nothing.

Class slides of the trio of potentially unconnected and unexpected children, proved to be a valuable tool for the analysis of cognitive functioning. In addition, coming as it did after previous experience with pairs of slides in the earlier unit, it served as a useful training device in looking for and relating visual clues.

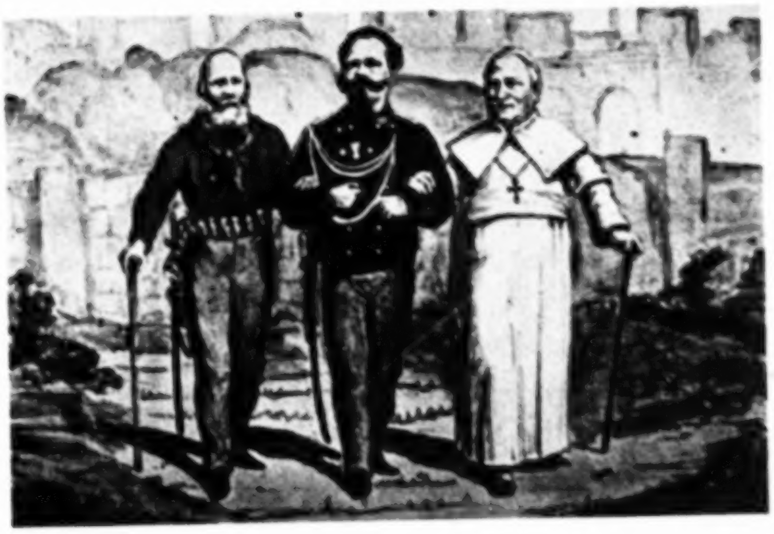
3. Italian Unification Slide Exercise

At the close of the Italian unification unit an exercise consisting of seven slides was administered in the classroom as a way of evaluating an illustrated slide lecture given at the beginning of the unit. Students were asked to arrange the slides in the historically correct chronological sequence and to identify and or note the significance of each slide in the sequence. The exercise was designed to encourage flexible, manipulative, and speculative thinking and to assess the concreteness or abstractness of the student's cognitive level of functioning. It also provided the classroom teacher with a measure of the student's grasp of the subject matter covered in the unit. Sample slides appear in Figure 14. Slide A involves the symbolism of a cartoon, where the student must match in an appropriate and meaningful fashion a situation they have studied with the visual symbolism. Slide B is one not familiar to the students, and would require much speculation in the search for clues in the content of the picture to aid them in identifying the period and place. While a picture of an Italian doge several centuries prior to Italian unification of the 19th century, the costume would be construed as some sort of robes of an official or churchman. In addition, there was a background view of what upon observation could be descerned as Venice. Slide C again calls for a search for clues, but this time in a more obvious context, i. e., a Garibaldian army and the Congress of

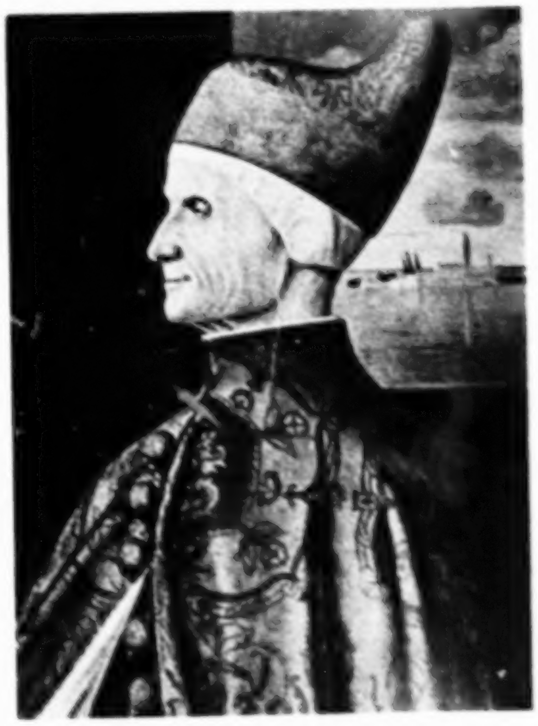
ITALIAN UNIFICATION SLIDE EXERCISE

(Figure 14)

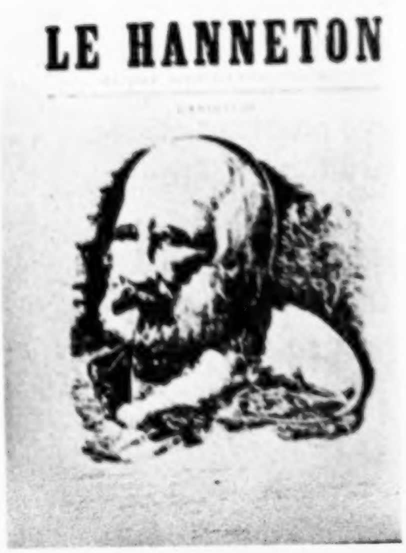
Slide A



Slide B

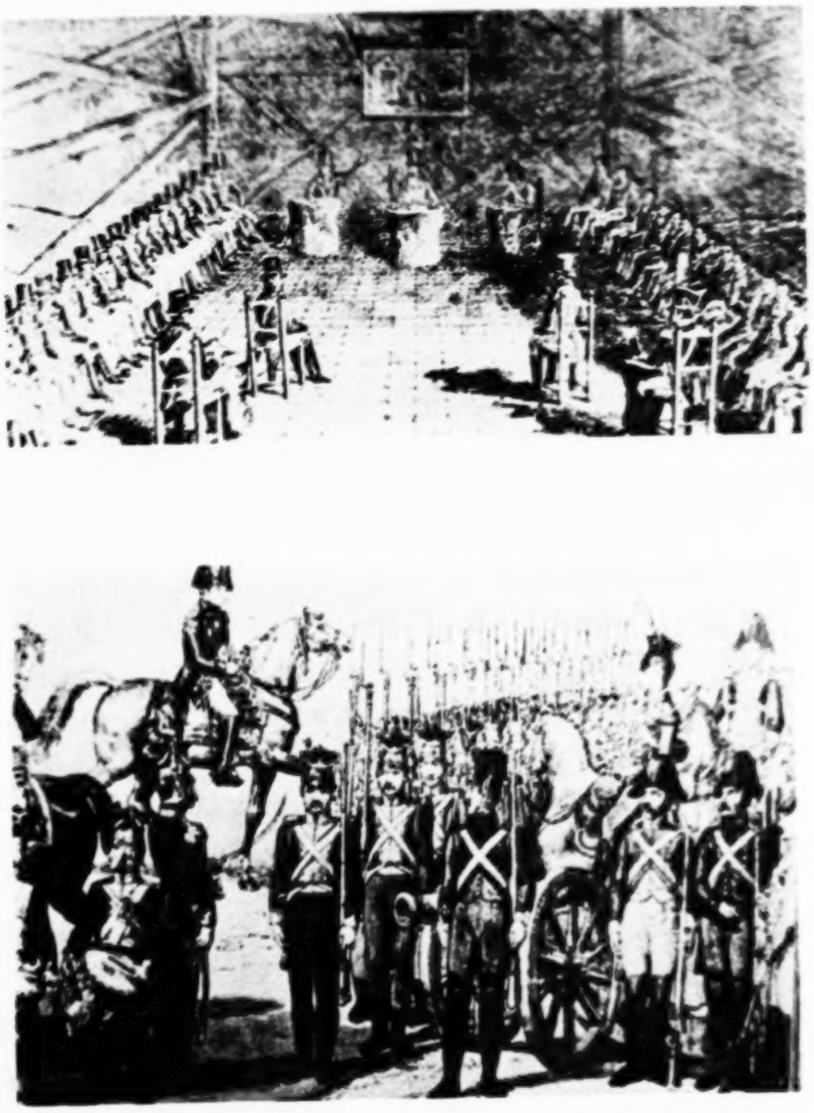


Slide D


LE HANNETON

Slide E

Slides C



Vienna. Slide D can be manipulated and identified either on a concrete level (Garibaldi) or on an abstract level by making use of the symbolism (lion with the "boot of Italy" between its paws). Slide E is obviously not connected to course content. Its identification could be either concrete or symbolic, e. g., a picture of an early time period in Italy or as symbol of what was destroyed in the move for Italian unification.

All of the students were able to handle the cartoon identification successfully, and all but one were able to find relevant clues to identify the slides. Three of the four students taking part in the exercise were able to go beyond the obvious meaning of the drawing to a more abstract interpretation. Two of the students responded to the Roman ruins slide at its face value, while the other two gave it broader symbolic significance.

4. Imperalism Exhibit

The exhibit staged last spring in conjunction with the Imperalism unit was repeated. A rich display of Asian and African art, fabrics, and foods as well as implements of everyday life were arranged in the school hall along with books opened to significant pictures and readings. Whereas the exhibit was mainly illustrative last year, this year two class exercises were built on it. In the first, a class discussion, the students were asked to use clues from the exhibit in examining the problem, "How did the people of Asia adapt to their environment?" In this exercise the students were able to come up with a number of relevant examples on their own and aided by clues of the teacher.

The second exercise, given as a homework assignment, asked the students to use evidence and clues from the exhibit to examine the question, "How might a European imperalist come to the conclusion that any given colonial society was or was not inferior?" While they had been explicitly instructed to use only the exhibit as a basis for their answers, all the students relied partly or completely on their texts to complete the assignment. It was, therefore, necessary to repeat the exercise as a classroom exercise, having the students discuss the problem and re-examine the exhibit during class time.

Three of the four papers turned in the second time were well organized and to the point, indicating that the students do have the capacity to function at an adequate level, despite a need for reinforced structure.

5. Affectivity Training in the Unit on Impressionism

The emphasis here was beyond the manifest content of the picture and into the realm of the "how." Students were introduced to this approach to pictures by showing them paintings of Impressionists with a few quotations from the painters about their feelings and intentions regarding the particular pictures. For example, Van Gogh's "The Potato Eaters" was shown with a quote from the artist himself: "I have tried to show how these peasants, eating their potatoes under the lamp light, had grown these very potatoes by hard manual labor with their very hands." Another Van Gogh, "Night Cafe," was discussed with the artist's comment, "I tried using red and green to show mood, a cafe where a person could brood or be unhappy."

Many kinds of factors were suggested in these quotes: desire to show something of a particular group or class's way of life, something of the quality of that way of life, use of color to express mood, etc. The students were then shown five Impressionist paintings of the exercise itself: Renoir's "Boating Party," Cezanne's "Card Players," Cezanne's "Women in a Field," Van Gogh's, "Prison Scene," and Van Gogh's "Starry Night." The students were asked to look at the painting from the artist's point of view and try to express and to speculate upon what the artist was trying to do. Unlike earlier exercises the emphasis was almost entirely upon encouraging a speculative attitude. The speculation was much more open-ended and subjective than in previous exercises where speculations were connected to and dependent upon historical facts.

Five students took part in the exercise. Two of the students were content-centered in their responses, mentioning the mood incidentally if at all. A third student responded in terms of what she believed the painter meant to convey in terms of mood. A fourth student described the mood of the pictures, supporting his impressions with details of color and activity from the pictures. The last student responded most strongly to the mood of the pictures until he got to Van Gogh's "Starry Night" which he simply rejected, almost as if overwhelmed by its intensity and lack of specific content.

6. Art Sorting Task

Following a lapse of several weeks after the Impressionism unit, four students again sorted 55 art cards (seven of which are illustrated in Figure 15 showing the wide diversity of selection) according to unstructured directions. Students were also instructed to sort, or at least indicate, other possible ways of sorting which occurred to them. The aim here was to see how flexible the student was in his categorizing behavior. A student who appears bound by his first categorization of the pictures would appear to be much more rigid than one who was able to respond easily and readily to quite different attributes of the pictures.

Two students came up with five different organizing schemes. Student M had eight piles in his first sorting, ranging from "Paintings I Like" and "Ones I really dislike" to content oriented classifications, e.g., "All Boats" and "Oriental People." The second time he grouped the cards according to the cheerfulness or gloominess of the atmosphere. The third scheme was built around balance, the fourth around light and the fifth "Something that strikes you right off – like the clouds strike you right off." All of this student's classes tended to be based on emotional or superficial impressions of the pictures rather than an integration of the pictures with other knowledge which he might have. While he had the largest number of organizational schemes, they did not represent real flexibility so much as variations on a theme and strong domination of his categorizing processes by affective factors.

Student FF with five organizational schemes spent only half an hour on the task in contrast to the student just described, who spent two hours. His first sorting was built around a formal classification of the pictures ranging from pre-impressionist to modern paintings with a group of Oriental paintings. When asked for another way, he came up with groups of people, groups of dead and inanimate objects, and groups of living and used-to-be living objects. Next he suggested grouping them according to fineness of line used in the painting. A fourth scheme was built around a realistic- – non-realistic dichotomy, and his last was action versus still life.

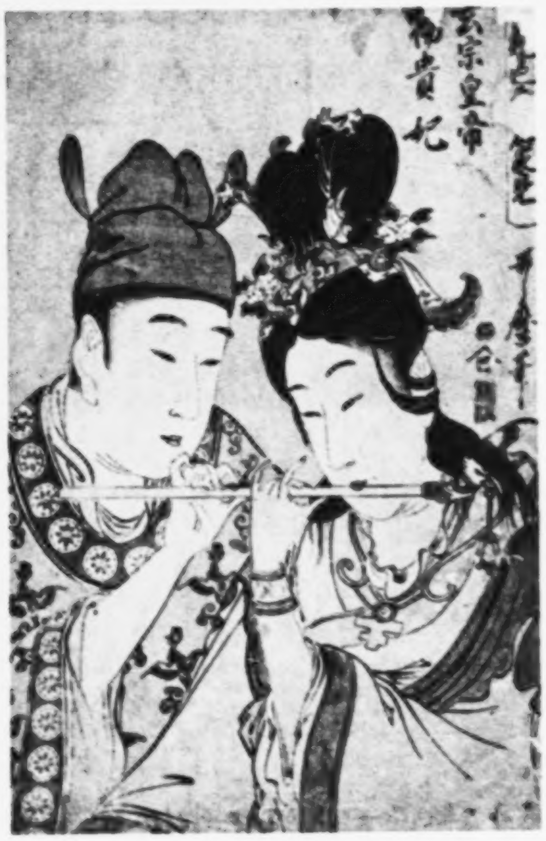
In contrast to the Student M, this student's organization schemes were much more categorical in nature and were guided by intellectual considerations rather than affective ones. While his groupings may seem more prosaic than the first student's, they were cognitively at a more controlled, abstract level.

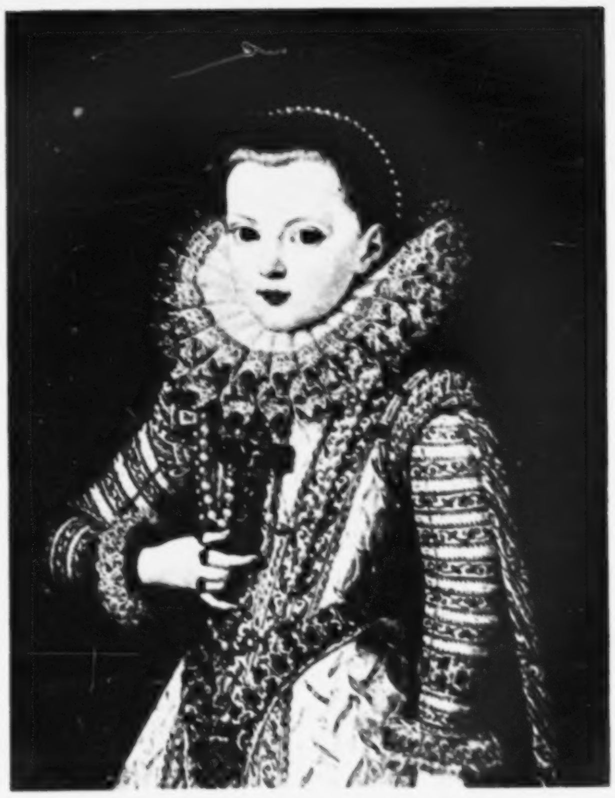
Student N went through the sorting process three times, but was unable to maintain categories once he had set them up. He would start out with six or eight categories, which he would collapse into four piles, but without regard for the relationship of all the cards in a given pile to the new category, so that at the end of the sorting process, cards in any given pile might be quite unrelated to each other.

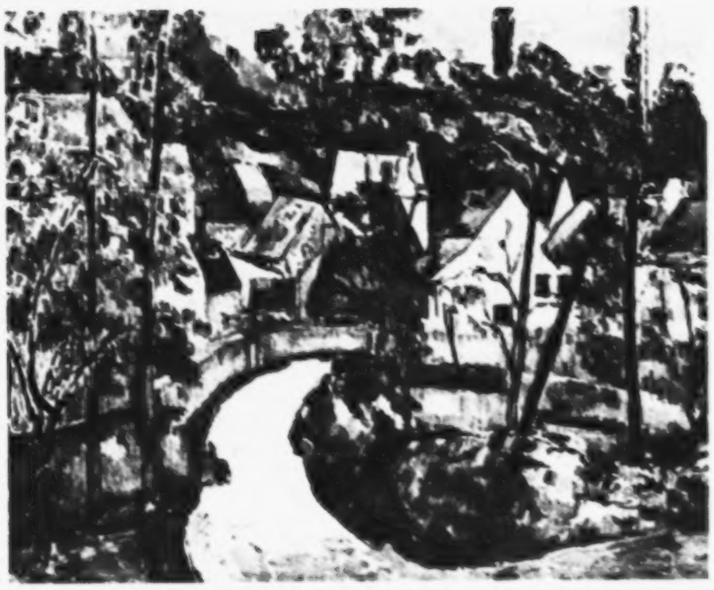
Student B sorted once according to art style and refused to try any other schemes, saying

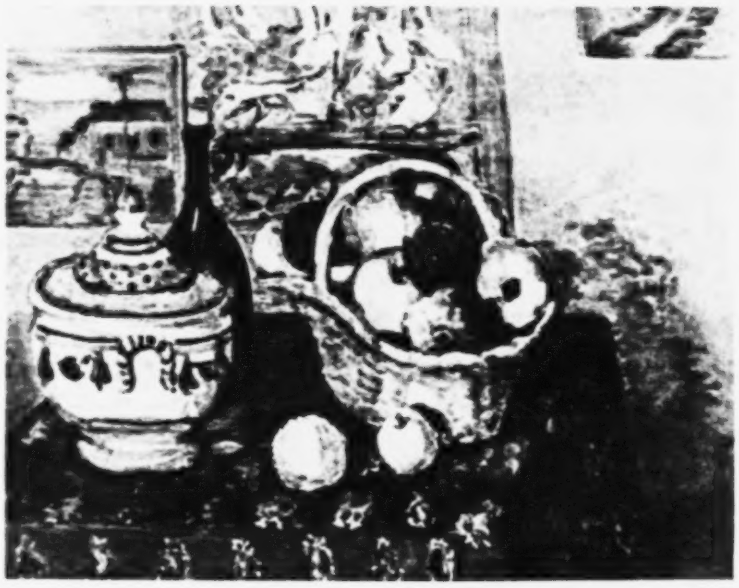
EXAMPLES OF PAINTINGS USED IN THE ART SORTING TASK

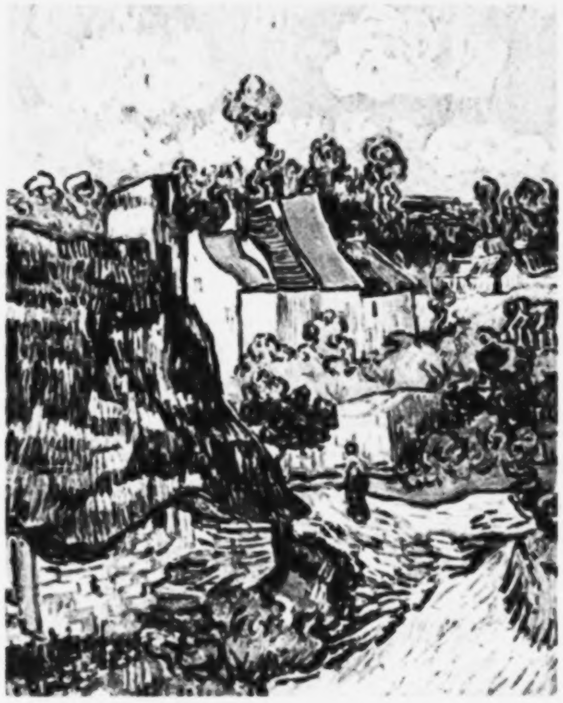
(Figure 15)

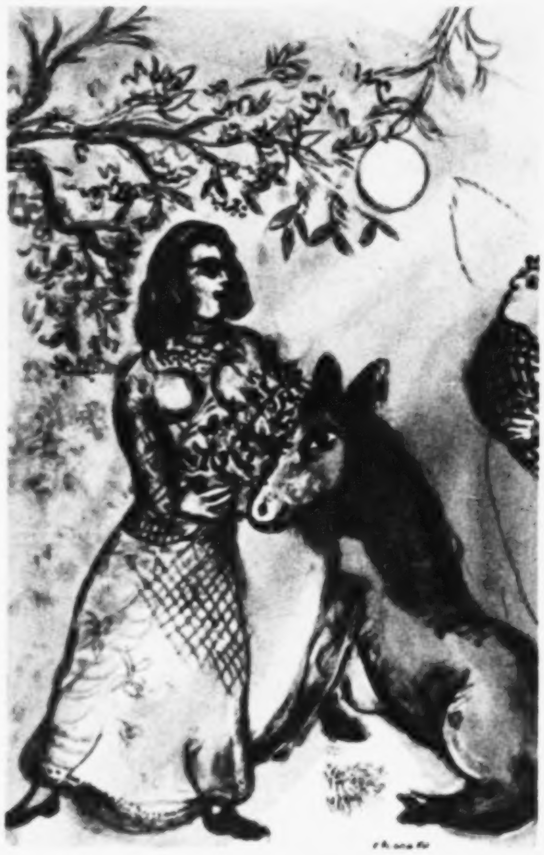


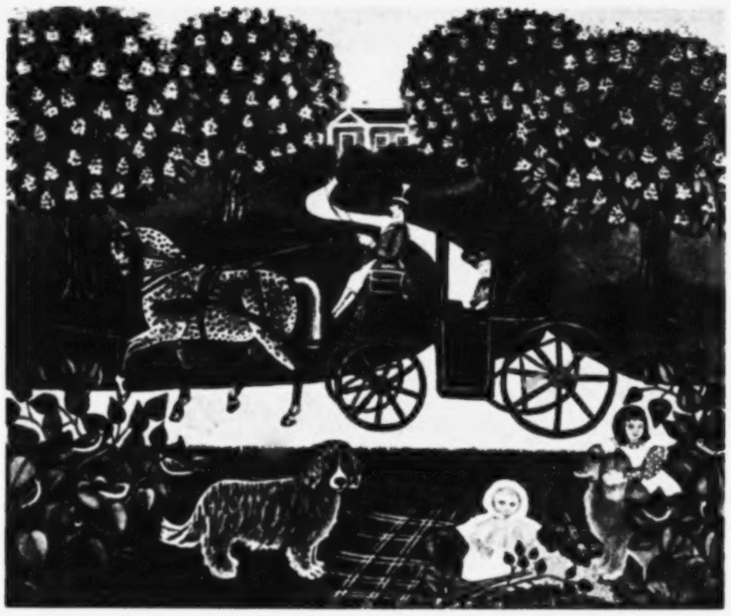












that he did not really like history or art and did not do things he was not interested in. For him, the task was most revealing about his motivational state rather than his categorizing ability.

Results of this task were of interest to the research staff in the way in which they correlated with many other pieces of data about these students and in their classroom work. Student M had given indications from time to time of excellent academic ability, but often tends to function at a superficial, peripheral level. The second student, FF, shows good over-all ability, though without the glimpses of outstanding ability which Student M reveals. Student N is consistently disorganized in his thinking, having difficulty following routine classroom assignments. Student B can perform at a high level, but has very rarely been motivated to do so, seeming to find success highly threatening.

7. "Revolution Is . . ." Booklet Exercise

An exercise developed last year as an outgrowth of the study of the Russian Revolution was used again with this year's students. Each student was given a set of thirty unlabelled photographs, all related in some way to revolutions, and a booklet of ten blank pages entitled "Revolution Is . . . ." The student was asked to choose ten pictures from the pack of thirty which best represented to him the idea of revolution. He was instructed to mount them in the booklet and write captions beside each one.

In examining the student responses, interest centered on the way in which the student approached the task, evidences of a guiding plan or concept, and the choices which he made. Six students completed the exercise and were enthusiastic and involved in it.

The two students whose choices and organizations gave most evidence of an abstract organization schemata showed significant similarities and differences in their approaches to the task. Both centered their booklets on the causes of revolution, rather than including courses and outcomes also. Both used their final picture-caption as a planned end to the sequence, a kind of summary statement. One student, FF, decided before looking at the pictures what he wanted to illustrate, and only then turned to the pictures. For him the pictorial material was quite supplementary and he indicated that he had to pad his sequence in order to use the required ten pictures. Student M also decided to concentrate on the causes of revolutions, but he was much more guided by the actual pictorial materials and stated that he would like to have used fifteen rather than ten pictures to show the concept.

While the two students just described operated within a fairly clearcut conceptual framework of causes of Revolution, a third, student D, attempted to work within a much larger framework, moving from feelings and thoughts through action and potentials of the action. While this approach gave her performance greater depth and range than was true of students FF and M, it suffered as a tightly knit logical performance. Causes and effects of revolution were mixed in a rather random fashion and there was some repetition of basic themes.

The fourth student, K, in order of quality of performance, had no set order to his pictures, being concerned almost entirely with what a revolution is like. Consequently each picture and caption was episodic, unrelated in any logical way to what came before or after it. It was, on the whole, quite a concrete performance.

The last two students both approached the task with a humorous set, probably suggested by the analogous "Peanuts" books. Student HH, however, was still guided to quite an extent by the directions for the task, the captioning being appropriate to the pictures, even if not at a very high abstract level.

For Student N, the activity of attempting to write humorous captions overshadowed the broader task of evolving a concept of revolution to such an extent that some of his captions were inappropriate to the pictures. For example, two pictures of violent deaths, one an execution and the other a massacre, drew the following captions:

"Revolution is execution. These fellows are losing their careers."

"Revolution is uncertainty. Are you sure we have the right one?"

The "Revolution Is . . ." exercise held up well in this, its third tryout in the classroom, both as an indicator of student concepts of revolution and in revealing underlying problems in cognitive functioning. To perform at a high abstract level on this task, the student must be able to formulate for himself a plan of organization based on, but not dominated by, the pictures with which he has to work. He must then be able to shape his sequencing and captioning of the pictures according to that plan without being distracted along the way. He must be able to see how one choice he makes relates to ones he has made and will make in his selection of pictures. And he must be able to do this within a prescribed structure – ten pictures.

Half of the students in the class were able to perform these operations with at least moderate success, as described above, though they had some difficulty in performing them within the set limits or in adhering to their organizational plan to the very end. The other three students had marked difficulty arriving at an overall plan of organization and two were significantly influenced in their approach to the task by the incidental humorous association given by the format of the booklets. The broad abstract implications of revolution appeared almost totally lost on them.

Figure 16 illustrates representative student responses in this exercise.

8. Cartoon Exercises

As a part of their training in abstract thinking the history students were presented with three exercises involving cartoons. In the first of these they were asked to match five cartoons with ten quotations taken from a variety of primary sources concerning the Second World War and from literature. The instructions stressed that more than one quote could go with any given cartoon and that quotes could be used more than once. The exercise was designed to evaluate the students' capacity to see and utilize symbolic relationships. It was also designed to check the flexibility of their thinking by encouraging them to see as many relationships between the quotes and the cartoons as possible. Figure 17 shows the five cartoons and several of the quotations follow:

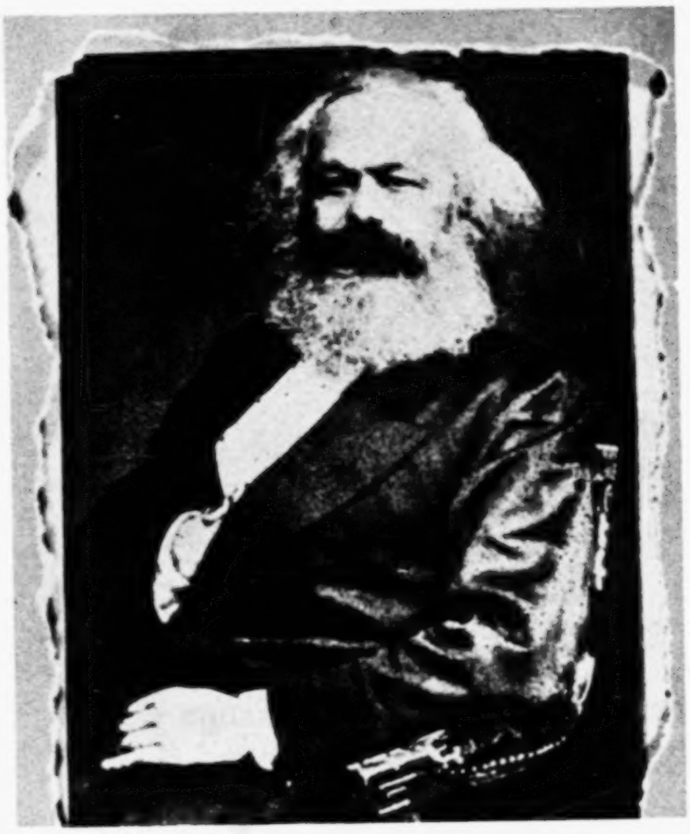
"It is too late for anger,
Nothing prevails
But pity for the grief they cannot feel" Stephen Spender

"Whoever is prepared to make the national cause his own to such an extent that he knows no higher ideal than the welfare of his nation – that man is a Socialist (Nazi). . ." Hitler

"Chamberlain returned to London in triumph. Brandishing the declaration which he had signed with Hitler, the jubilant Prime Minister faced a large crowd that pressed into Downing Street, singing "For He's a Jolly Good Fellow." "My good friends," he said, "this is the second time in our history that there has come back from Germany to Downing Street peace with honor. I believe it is peace in our time." **Rise and Fall of the Third Reich**

"REVOLUTION IS" CAPTIONING EXAMPLES

(Figure 16)



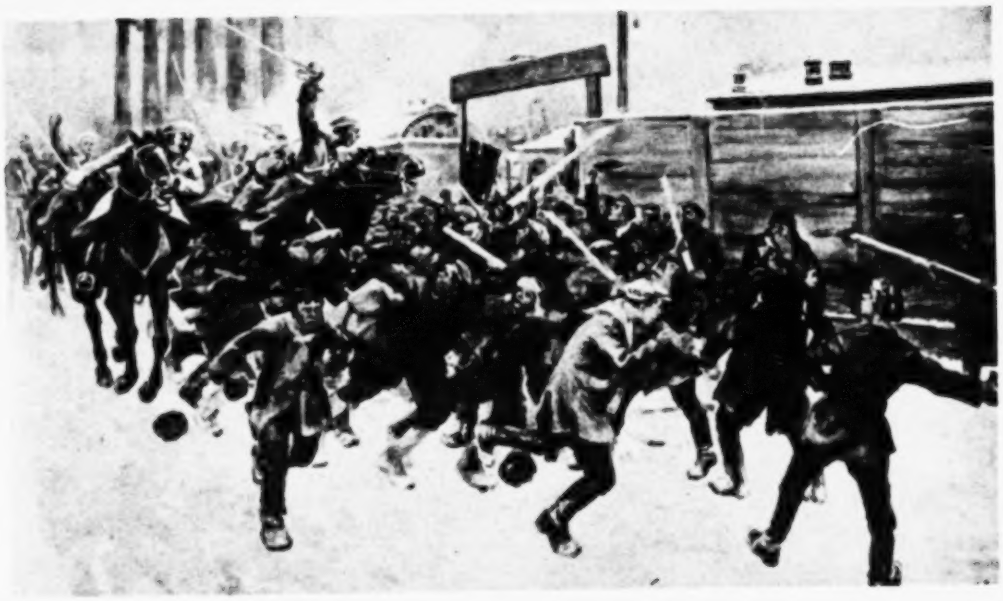
A new way of life

A man with new ideas

A man who thinks

Clashing with new ideas

Stimulation by intellectuals of new ideas and conclusions drawn in the interest of the people and their rights.



Chaos

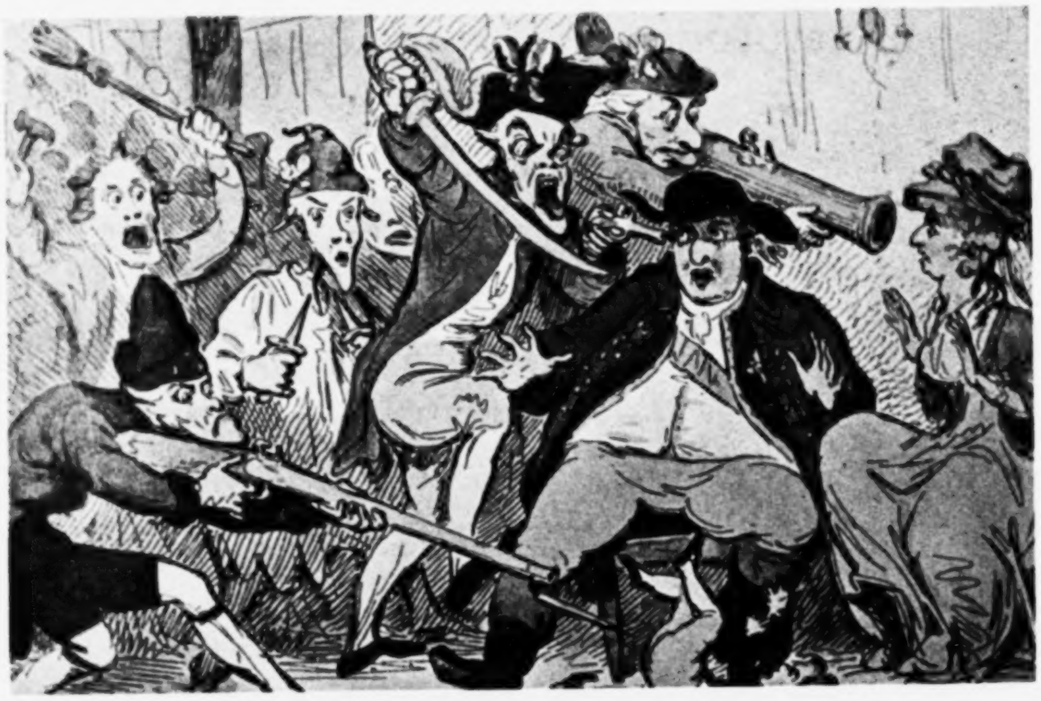
Confusion

Fighting for freedom

Soldiers killing their own people

Fear

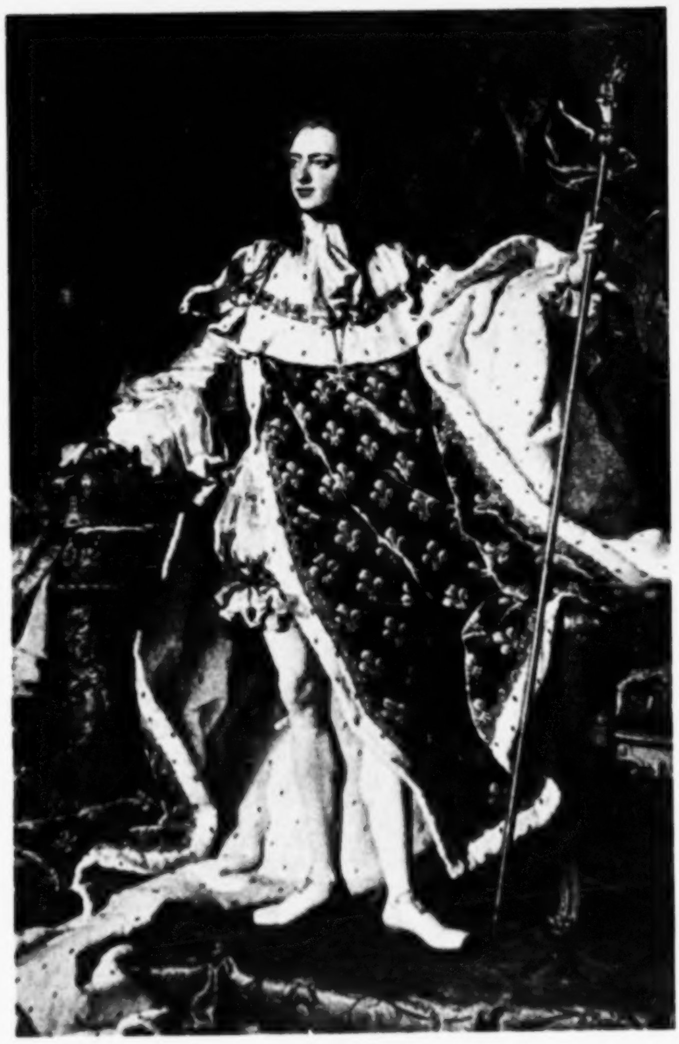
Storming place and taking over them by force, attacks by stronger people on weaker people



A surprise, I hope these people have life insurance

A time when the people's desire for a radical change in their government and way of life is brought to the surface

Surrender of frightened people to stronger forces



A man to hate

Incompetent rulers

All for the whim of one man

Old ideas

Not enough food

Many executions

Counter-execution, the grim reapers

And building

No hope of something better

On his mind

Hunger and dejection

Despair, sickness, poverty,
depression, no work and no
money

Sorrow

Winning the battle but not the struggle

Enough force to get things changed

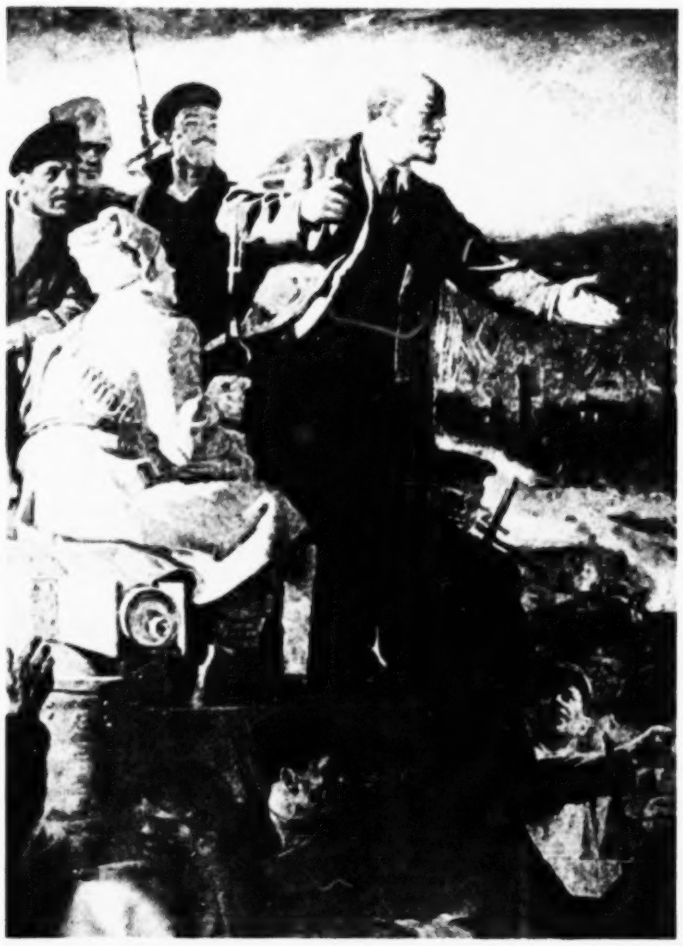
Guns

DEATH

Mass murder

Losing the battle but not the war,
we'll be back

Defeat or victory



To be deceived

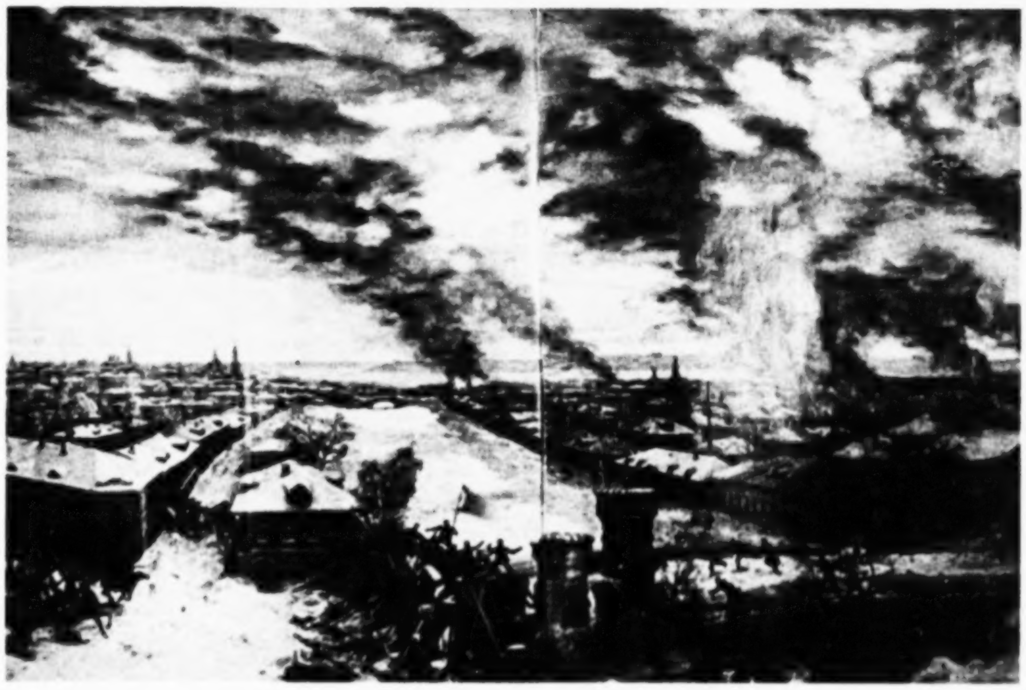
A man to carry out these ideas

A man who leads

Many speeches

People looking to a leader

A leader



HELL

The destruction of a way of life, an autocratic past, and the end of the silence of the governed peoples

Mass destruction of a town. Fear

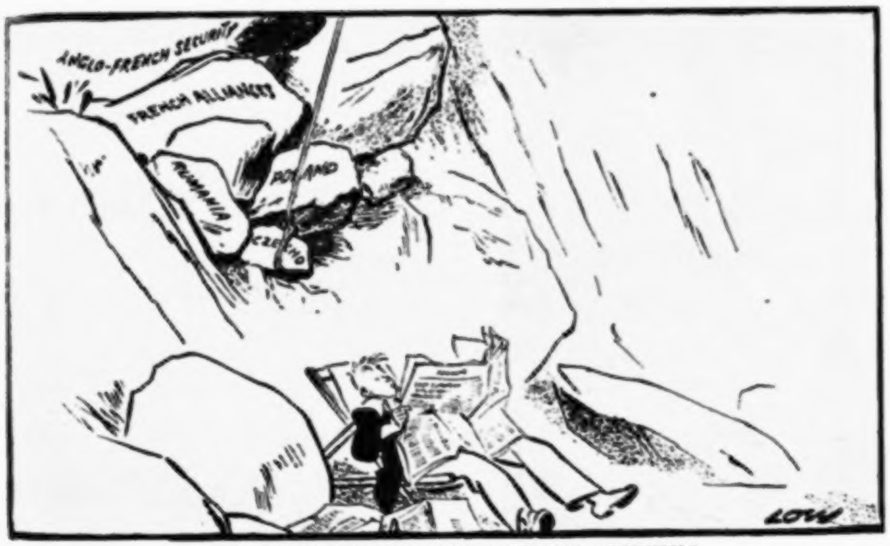
Entire cities are destroyed

Towns, homes destroyed, pillaging

CARTOONS USED IN THE CARTOON QUOTES EXERCISE

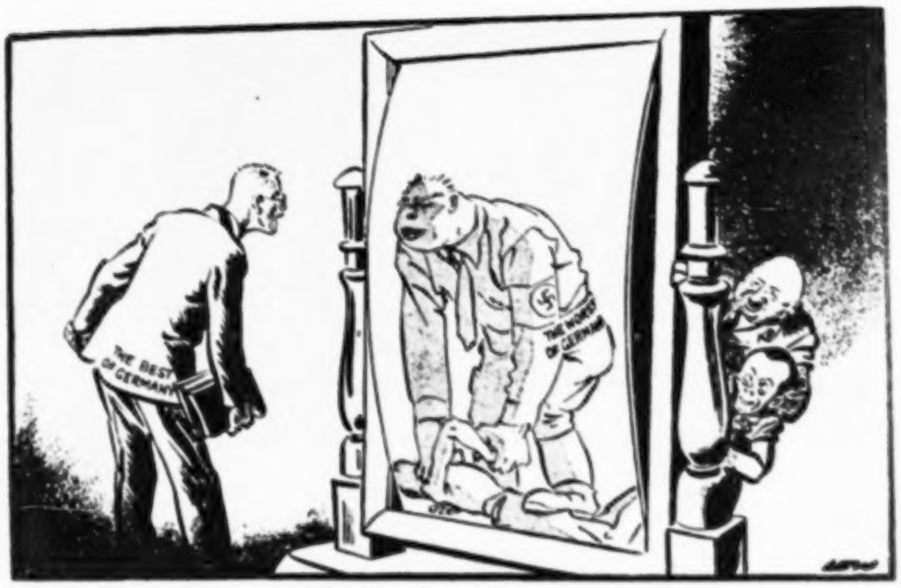
(Figure 17)

A.

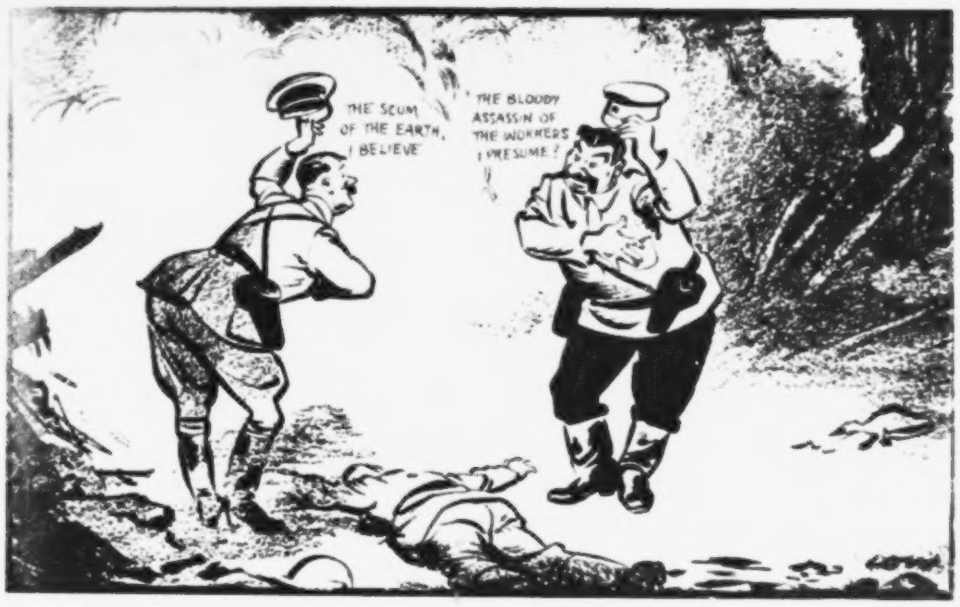

ANGLO-FRENCH SECURITY
FRENCH ALLIANCES
RUMANIA
POLAND
CZECHO
LOW

WHAT'S CZECHOSLOVAKIA TO ME, ANYWAY ?

B.

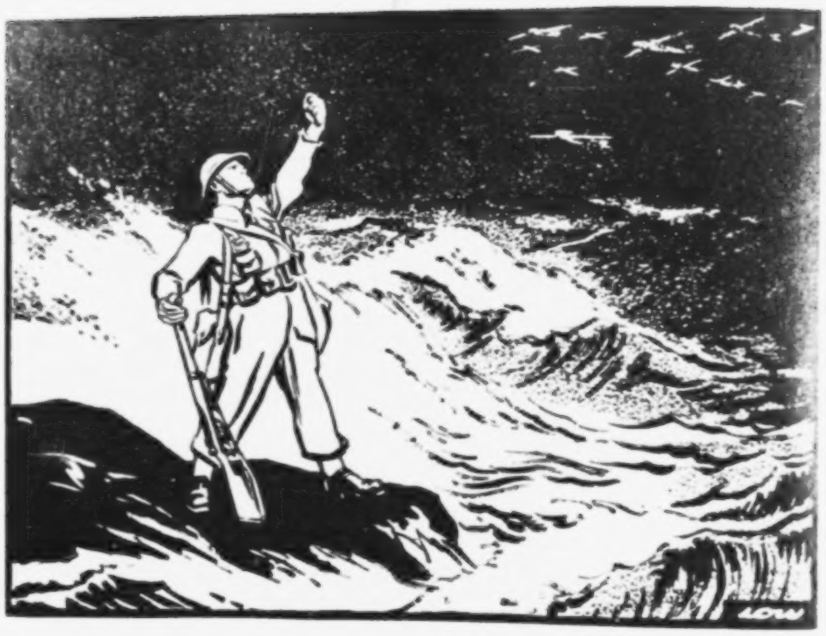

THE BEST OF GERMANY
THE WORST OF GERMANY
LOW

"HIMMEL! IS THAT ME?"


THE SCUM OF THE EARTH, I BELIEVE
THE BLOODY ASSASSIN OF THE WORKERS I PRESUME?
LOW

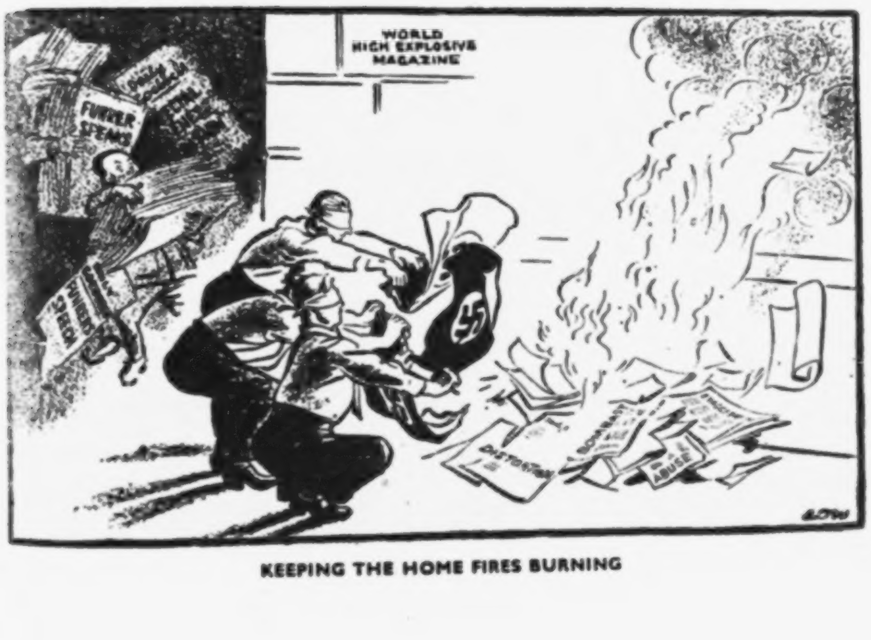
RENDEZVOU

D.



"VERY WELL, ALONE"

E.


WORLD HIGH EXPLOSIVE MAGAZINE
FUHRER SPEAKS
DISTORTION
ABUSE
LOW

KEEPING THE HOME FIRES BURNING

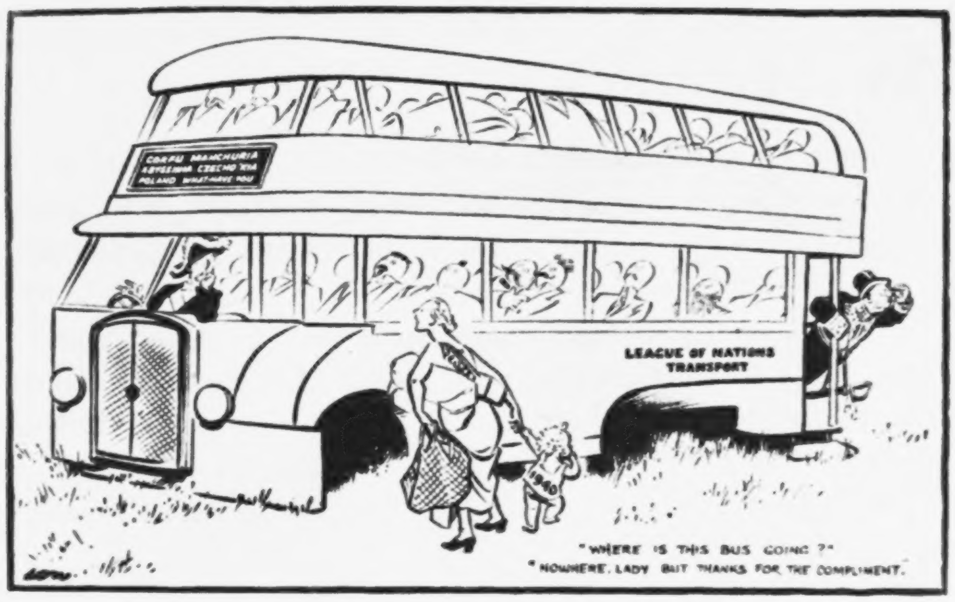
The second cartoon exercise asked the students to compare a cartoon of Napoleon in a small boat in a tub of water surrounded by caricatures of the great powers and one of Hitler portrayed as a child trying on the Kaiser's mustache. This proved to be an easy exercise for the students at this point, when they had numerous exercises asking them to make comparisons with slides. The use of symbolic material rather than pictures of actual people or events did not seem to bother them, but one of the students quickly realized that these cartoons were produced at a time early in the careers of Napoleon and Hitler. "The slides," he said, "both depict the humorous contempt of the establishment toward Hitler and Napoleon when both were fairly new and just coming into power." One student, however, took a different view. "Both slides of little Adolph and little Napoleon would have to have been drawn long after the men had died so that the cartoonist could see in perspective. Both men were only human and therefore little in comparison to the millions they ruled." This student quite clearly missed the salient statement of the cartoons.

In the third cartoon exercise the students were asked to write captions for two cartoons. This proved to be a much harder task than either matching quotes or making comparisons. Two of the students only attempted to caption one of the two cartoons. Figure 18 reproduces Cartoon 1 with student captions. There is an attempt to approach the task in a humorous vein, but deeper implications of the picture are missed. One student focussed on a single aspect of the picture, the fact that it is a double-decker bus, ignoring all other information given in the picture, and treats it as a portrayal of the British situation. This is a very good example of the kind of thinking frequently seen in small children, where one aspect of the perceptual situation is taken for and treated as the whole, instead of having an awareness of the situation as an overall, integrated totality of related parts. This student, Student N, demonstrated this tendency repeatedly in his class work and in other perceptual exercises.

To sum up generally what the experimental curriculum units have been designed to do, it is obvious that a major thrust has been the use of visual materials. In part, this has been done because of their attention-getting and motivational aspects. Students have frequently expressed a preference for visual over verbal materials. However, the need for extended training in the use of verbal materials has become more evident and a strong conviction has developed that students would be done a real disservice if they are not enabled to perform with equal ease the cognitive operations required whether embedded in visual or verbal materials. The ability to relate abstractions in coherent larger blocks; to view ideas multidimensionally; to follow complex sequences of people, events, and ideas – to mention a few of the abilities needed if one is to move competently in the intellectual realm transcend the particular media, be it verbal or visual. The fact remains that a student may find himself blocked at the outset of a task because of a resistance to its verbal nature with serious consequences for his further learning. A sensible approach might entail beginning with visual materials and with brief verbal exercises modelled on the word sorting and abstract words tasks where the terms can be handled directly without the usual contentual supports given in texts and readings. Then a more generalized transfer to longer and more closely interwoven verbal material can be provided through specific training.

CARTOON CAPTIONING EXAMPLES

(Figure 18)


CORFU MANCHURIA
ABYSSINIA CZECHO'SIA
POLAND WHAT-HAVE-YOU
LEAGUE OF NATIONS
TRANSPORT
1940
"WHERE IS THIS BUS GOING?"
"NOWHERE, LADY BUT THANKS FOR THE COMPLIMENT."

LET-DOWN BUS

1. Welcome, Peace loving friend.

2. "Driver, I do believe you are quite lost and I see no reason for me to ride with you. I fear it will be a long time before you reach my destination."

3. "Tell me, how long will it take to get where I'm going?"

4. British double decker
   Woman: Say driver, how come this bus doesn't have any wheels?
   Driver: We're waiting for them. Chamberlain said this German was going to be here to (put them on)

PART IV

Two Profiles in Learning

Two students have been selected more because of certain contrasts than for their representativeness or the student group. Considering the variety of individual clusterings on the wide range of intellectual and personality factors examined during this year of the project's operation and the amount of time available for analysis this year, it seemed more useful to take two students who demonstrated some interesting differences in style of learning capacity and performance. In the work of the coming year a more detailed analysis of intellectual reaction tendencies and behavioral correlates will be made of both Arlington and regular school students to determine the nature and degree of group and individual differences. For the present, the two profiles which follow describe students who may well be found in classes for the emotionally disturbed in schools similar to Arlington School.

Student I

"Hey Bill, want to join me for a cup of coffee?"

"Not particularly. It makes me quite nervous and also (in a whisper) . . . it makes me want to go to the bathroom."

"How about an English muffin?"

"Oh, no thanks, I'm on a starch-free diet."

"What about some water?"

"Well . . . . I think that might be safe."

This production of **I**'s in creative writing class is more than a simple cute story. There is much in her background to suggest that it reveals a basic attitude to life and school in particular. **I** seems to have decided that academic work is safe enough – at least some parts of it – and so she is able to involve herself in it. But one must never lose sight of the fact that school is not an autonomous, ego-free activity for **I**, but only a fairly adequate way to defend against particularly significant and intense anxieties.

The choice of academic activities to maintain control seems clearly to fall back on her overt family configuration, and a marked identification with an academically oriented father who actually teaches in college. The mother, too, is a college instructor. **I** has always been extremely precocious intellectually, behavior not unexpected in such a home surrounding. A clinical evaluation of her home environment describes its rigidity and coldness. It is only a short step to infer the support **I** could undoubtedly obtain primarily through intellectual achievements.

Her pattern of functioning, as the cognitive style tasks suggest, indicates that **I** has integrated this emphasis on intellectual mastery into appropriate behavior patterns. She is quite reflective, to the extent that, as the experimenter describes the situation,

> "After her eyes rested on the correct drawing, she then proceeded to examine carefully all the others, and in the process seemed to get side-tracked from her first intuition, became occasionally confused, and made a final incorrect choice."

This style of behavior is revealed quite clearly in her creative writing course. There, the observer characterizes her work as "involuted and intense." Her subject matter is similarly described, "narrow limits, simple instances, fleeting moments."

Poetry, as opposed to prose, seems to offer a limited way out of this pervasive manner. For here she can be vague and unclear; it is part of poetic license. But she circumscribes herself once again, this time finding it necessary to use quite an esoteric vocabulary.

Her writing changed markedly during the year. Her vocabulary became less obscured and her poems conveyed more "meaning." It appears that opportunity to express herself through the freer and less circumscribed medium of poetry may have helped to release a productive spontaneity.

I,a persistently "reflective" student, does indicate then the possibility of modifying to some extent through the school experience an intellectual style preference.

Student M

M, a student in both junior English and Creative Writing, appears very apathetic, having great difficulty in participating directly. **M** shows little initiative in gathering books for reading projects, and refuses to make decisions about the main themes or relevance to a central theme without consulting the teacher. **M** rarely takes positive initiative in leading a discussion, but when other students object to some materials or approaches he will sometimes offer comments on their appropriateness to classroom work. In Creative Writing his papers deal mainly with the description of characters whom he, as the omniscient narrator, observes with almost ironic detachment.

In one of his exercises in Creative Writing, **M** tells the story of a small boy who gets lost in the forest while walking from the house of his parents to that of his grandparents. The boy is finally found by his grandfather. The boy is punished, "for getting lost and disturbing his grandfather." **M** asks "What had he done? Had he committed any crime?", and **M** answers his own question: "No, he had gotten lost and needed help!"

If there is one salient characteristic of **M's** behavior in the classroom, it is getting lost and needing help! Any why should teachers resent, he seems clearly to be saying, the need to find him and bring him home. Clinically, this academic lack of independence can be traced back to ungratified dependent needs early in life. His mother died during his first year of life, and he was reared by a string of nurses. Other aspects of his background generally support the clinician's comment that "his early childhood history is characterized by loss after loss."

This dependence need is closely tied in with a markedly apathetic attitude in school. Close attachments have failed him in the past, and he seems reluctant to invest himself or to show ability in any area, "lest (as the clinician puts it) he fail, and the people he becomes attached to leave him." The only way that he has been able to maintain an (admittedly not quite satisfactorily) relationship with his father has been to behave in a "docile, shy, frightened, and obedient fashion." Clearly this pattern has been replicated vis a vis the authority figure of the school situation. The teacher is required to direct his decisions on themes in his reading; he shows little initiative in class discussions.

It is difficult, then, to get **M** to write, but he speaks a great deal. When he does write, often there is the opposite side of this dependent attitude. He frequently writes from the standpoint of the omniscient narrator well in control of the situation. The story referred to above is told from the standpoint of the lost child grown-up someone who certainly would need no one to lean on and one quite in a position now to evaluate his own grandfather's failure.

The school situation made a very positive contribution to **M's** development along these lines. Thus, despite his initial general reluctance to actively involve himself and/or to write much in class, he did contribute one question to an essay exam in English. Taking this controlling-role in class apparently stimulated him to write the exam and to become actively involved further in class as the year progressed when he discovered that he experienced no loss or failure from such activity.

M's behavior on the cognitive style measures is quite consistent with his general picture. He was quite impulsive, perhaps because he could not cope with the strain of decision making. After getting the right answer, he wanted to figure out why the others were not correct. This may have been a ploy to enlist the assistance of the female experimenter. But the only really explicit indication of the dependency syndrome was his choosing only one picture for special citation – he liked the one of the baby!

On the various exercises in History, **M's** performance on visual material tends to be uneven. He shows ability to recognize the abstractions involved, but he ends up with greater concern for concrete aspects of the material. However, in the perceptual training unit, which extended over a three week period and was specifically directed towards greater abstraction, **M** was able to modify his preference for concrete details. At the end of the perceptual training unit, he was able to go beyond the concrete elements and make synthetical observations. This may indicate that this type of intensive training was effective in modifying **M's** impulsive cognitive style. Synthesis requires reflection! In the interview on the Chinese recipes he showed marked indications of originality in using this kind of material for historical and cultural implications.

As a rule, though, his tendency to close off quickly curtailed the potential richness of his reactions to the various tasks.

A POSTSCRIPT

This report has not been written as an isolated unit or demonstration. It has roots in research and demonstration over the past five years and it promises richer fruition in the near future with the continuation of this project for 1967-68 under the support of the Bureau of the Education of the Handicapped, Division of Research, United States Office of Education. A "final report" – if there can be a final report in the search for a closer connection between the theories of learning and the theories and practices of instruction – will be available in September 1968.

Reflecting back on what has been accomplished, the McLean Hospital School can take pride in the fact that it has clearly demonstrated that emotionally disturbed children and youth can be helped to learn even when hospitalized and that they need not lose out in time and fall behind their friends of the same age. The annual High School graduation now provides eloquent testimony that the young patient can be a student even though a patient and with the help of understanding and skilled teachers the disturbed adolescent can continue his academic growth during a prolonged period of hospitalization. Creative teaching coupled to conviction in the adolescent's ability to study and to learn has enabled many to receive their high school credential and to enter college.

How well these graduates made out in their schools and colleges we hope will be studied via follow up by means of a supplementary contribution or reapportionment of our present research budget. How lasting and how effective were the post hospital adjustments in school and community? This question we expect to answer in some detail within our 1968 report.

But not all our student patients have succeeded in making the academic grade, not all of the seniors were graduated, and not all of our graduates were able to find entry into higher education. Why some succeeded and why others failed remains a question of high priority to the clinician, the school administrators, the teachers and the researchers. Looking ahead we believe that this question can be answered via the kind of cooperative effort shown by our working cadre.

Finally, the problem of replication must be raised in view of the special sample and hospital setting used in the demonstration and try-out of curriculum materials and methods. It is true that the sample has been skewed to the upper socio-income levels, although the recent admission of day students under Massachusetts Law, Chapter 750, has provided us with a wider range of abilities and emotional problems. It is also true that the controlled admissions and the rich resources of a private hospital have placed some limitations on the generalization that can be drawn. We are merely calling attention to the need for trying out the materials and methods that have been developed at McLean Hospital with other types, more or less severe than those in our own sample. For example, we have had no student-patients who show mental retardation nor have we faced the autistic patient in our classrooms. Here is an area for further research using the information gained with our materials and our more favored sample and setting.

BIBLIOGRAPHY

Abelson, R. P. and Levine, C. A., "A Factor Analytic Study of Cartoon Humor among Psychiatric Patients." In J. Personality, December 1958, Vol. 26, No. 4.

Crutchfield, Richard, "Sensitization and Activation of Cognitive Skills." In J. Bruner (Ed.), **Learning About Learning.** Washington D. C.: U. S. Government Printing Office, Superintendent of Documents, OE-12019 Cooperative Research Monograph No. 15, 1966.

Kagan, Jerome, "Impulsive and Reflective Children." In J. Krumboltz (Ed.), **Learning and the Educational Process.** Chicago: Rand, McNally and Co., 1965.

Wallach, M. A. and Kogan, N. **Modes of Thinking in Young Children.** New York: Holt, Rinehart and Winston, Inc., 1965.

OE 6000 (REV. 9-66)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF EDUCATION

ERIC REPORT RESUME

ERIC ACCESSION NO.

IS DOCUMENT COPYRIGHTED? YES ☐ NO ☐

ERIC REPRODUCTION RELEASE? YES ☐ NO ☐

CLEARINGHOUSE ACCESSION NUMBER	RESUME DATE	P.A.	T.A.
	06 01 67		

TITLE

Final Report

Improving the Education of Emotionally Disturbed Adolescents Through Educational Programming in Terms of Curriculum and Methods.

PERSONAL AUTHOR(S)

Kenney, Helen J. Kvaraceus, William C.

INSTITUTION (SOURCE)

McLean Hospital - Belmont, Massachusetts

SOURCE CODE

REPORT/SERIES NO.

OTHER SOURCE

SOURCE CODE

OTHER REPORT NO.

OTHER SOURCE

SOURCE CODE

OTHER REPORT NO.

PUB'L. DATE 01 June-67 -

CONTRACT/GRANT NUMBER OEG-1-6-062315-1586

PAGINATION, ETC.

104

RETRIEVAL TERMS

emotionally disturbed, educational program, adolescent

IDENTIFIERS

ABSTRACT

The basic aims of the project were to design and evaluate instructional techniques to be used with emotionally disturbed adolescents. The specific objectives were to evaluate experimental curriculum units in relation to cognitive functioning and cognitive skills training, to obtain control population data in order to determine to what extent learning difficulties characterize emotionally disturbed adolescents in particular or to what extent they are characteristic of adolescent learning problems in general, and to investigate cognitive style, creativity, and linguistic competencies among disturbed adolescents.

The cognitive style dimension upon which the project concentrated was that of reflection-impulsivity, i.e., a student's disposition to reflect upon the elements in a problem situation as opposed to an impulsive unconsidered response. Arlington students showed a higher degree of impulsivity on one of the two standardized measures used compared to a group of normal controls. On tests of creativity there were no statistically significant differences between the two groups. Arlington students show a greater relationship between creativity and reflection on verbal measures and between creativity and impulsivity on visual measures. Language problems are semantic not syntatical. Cognitive functioning can be improved with a combination of visual and verbal materials, and specific intellectual skills training.